GE
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Pittsfield, MA 01201
USA

Transmitted Via Overnight Courier

February 6, 2009

Mr. Dean Tagliaferro
U.S. Environmental Protection Agency
c/o Weston Solutions, Inc.
10 Lyman Street
Pittsfield, MA 01201

Re: **GE-Pittsfield/Housatonic River Site**
Groundwater Management Area 2 (GECD320)
Long-Term Monitoring Program
Monitoring Event Evaluation Report for Fall 2008

Dear Mr. Tagliaferro:

Enclosed is the *Groundwater Management Area 2 Long-Term Monitoring Program Monitoring Event Evaluation Report for Fall 2008* (GMA 2 Fall 2008 Monitoring Event Evaluation Report). This report was prepared in accordance with section 2.7 of the Statement of Work for Removal Action Outside the River (SOW) (Appendix E to the CD), with further details presented in Section 7.0 of Attachment H to the SOW (Groundwater/NAPL Monitoring Assessment, and Response Programs).

The GMA 2 Fall 2008 Monitoring Event Evaluation Report is the third report to be submitted as part of the long-term monitoring program for this GMA. It summarizes activities performed at GMA 2 (also known as the Former Oxbow Areas J and K GMA) during fall 2008, and presents the results of the latest round of sampling and analysis of groundwater performed as part of the groundwater quality monitoring program.

Please call Andrew Silfer or me if you have any questions regarding this report and proposal.

Sincerely,

Richard W. Gates/gwl for

Richard W. Gates
Remediation Project Manager

Enclosure
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ARCADIS
Infrastructure, environment, buildings

General Electric Company
Pittsfield, Massachusetts

Groundwater Management Area 2 Long-Term Monitoring Program Monitoring Event Evaluation Report for Fall 2008

February 2009

Groundwater Management Area 2 Long-Term Monitoring Program Monitoring Event Evaluation Report for Fall 2008

(GMA 2 Fall 2008 Monitoring Event Evaluation Report)

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February 6, 2009

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ARCADIS

1. Introduction

1.1 General

On October 27, 2000, a Consent Decree (CD) executed in 1999 by the General Electric Company (GE), the United States Environmental Protection Agency (EPA), the Massachusetts Department of Environmental Protection (MDEP), and several other government agencies was entered by the United States District Court for the District of Massachusetts. The CD governs (among other things) the performance of response actions to address polychlorinated biphenyls (PCBs) and other hazardous constituents in soil, sediment, and groundwater in several Removal Action Areas (RAAs) located in or near Pittsfield, Massachusetts that collectively comprise the GE-Pittsfield/Housatonic River Site (the Site). For groundwater and non-aqueous-phase liquid (NAPL), the RAAs at and near the GE Pittsfield facility have been divided into five separate Groundwater Management Areas (GMAs), which are illustrated on Figure 1. These GMAs are described, together with the Performance Standards established for the response actions at and related to them, in Section 2.7 of the *Statement of Work for Removal Actions Outside the River* (SOW) (Appendix E to the CD), with further details presented in Attachment H to the SOW (Groundwater/NAPL Monitoring, Assessment, and Response Programs). This report relates to the Former Oxbows J and K Groundwater Management Area, also known as and referred to herein as GMA 2.

The Consent Decree and Attachment H to the SOW specify a series of steps to be taken at each of the GMAs to investigate and, as appropriate, respond to groundwater conditions. These documents provide initially for the design and implementation of a baseline monitoring program at each of the GMAs. Pursuant to Section 1.1.1 of Attachment H, the objective of the baseline monitoring program was to establish existing conditions in order to assess whether the existing response actions are protecting surface water, groundwater and sediment quality, and human health in occupied buildings. Additionally, the baseline monitoring program provides the basis for evaluating the effectiveness of future response actions, including the identification of any additional response actions that may be necessary to attain the Performance Standards. The baseline data are to be used in the future for comparison with collected under the long-term monitoring program.

The baseline monitoring program consists of semi-annual groundwater quality sampling and quarterly elevation monitoring and generally lasts for a minimum two-year period, although Section 6.1.3 of Attachment H to the SOW allows for the modification and/or continuation of the baseline monitoring program if the two-year baseline period ends prior to the completion of soil-related response actions at all the RAAs in a GMA. At GMA 2, baseline monitoring was conducted from spring 2002 until spring 2007, shortly after the completion of the removal action for Former Oxbow Areas J and K comprising GMA 2. In June 2007, GE

submitted a *Baseline Assessment Final Report and Long-Term Monitoring Program Proposal for GMA 2* (GMA 2 Long-term Monitoring Proposal), which was conditionally approved by EPA on October 9, 2007. That report proposed a long-term groundwater monitoring program for GMA 2. This report constitutes the third monitoring event evaluation report submitted pursuant to the long-term groundwater quality monitoring program at GMA 2.

1.2 Background Information

1.2.1 Description of GMA 2

GMA 2 encompasses the Former Oxbow Areas J and K RAA, comprised of approximately 8.5 acres adjacent to the Housatonic River, located approximately 2,500 feet upstream of the Newell Street Bridge (Figures 1 and 2). This GMA contains a combination of non-GE-owned commercial areas, residential properties, and recreational areas. Certain portions of this GMA originally consisted of land associated with oxbows or low-lying areas of the Housatonic River. As shown on Figure 1 and 2, the Housatonic River flows through the central portion of this GMA, separating Former Oxbow Areas J and K. Re-channelization and straightening of the Housatonic River in the early 1940s by the City of Pittsfield and the United States Army Corps of Engineers (USACE) separated several such oxbows and low-lying areas from the active course of the river. These oxbows and low-lying areas were subsequently filled with various materials from a variety of sources, resulting in the current surface elevations and topography.

Former Oxbow Area J encompasses approximately 6 acres located north of the Housatonic River, south of East Street, and between Fasce Street and Commercial Street. Commercial businesses occupy a portion of this area along East Street. The west side of this portion of GMA 2 consists of a wooded recreational area and footpath, and the rights-of-way for undeveloped Longview Terrace and Zeno Street. The remainder of Former Oxbow Area J contains commercial properties and small, wooded recreational areas.

Former Oxbow Area K encompasses an area of approximately 2.5 acres south of the Housatonic River, across from the eastern portion of Former Oxbow Area J and generally to the northeast of Ventura Avenue. This area consists of a large open field on the south side of the river, and the right-of-way for Longview Terrace. The majority of this generally flat area is undeveloped and covered with grass and low brush. However, residential properties occupy a portion of this area along Ventura Avenue.

Removal Actions performed by GE at the Former Oxbow Areas J and K RAA were implemented between July and November 2006, and generally included site preparation, soil removal/replacement, and property restoration. The excavations were generally completed to depths of one to three feet, with the exceptions that one six-foot removal for PAHs was performed at Parcel K10-11-3 and one seven-foot removal for PCBs was performed at Parcel K10-10-6. The final limits of soil removal were completed to the general limits shown on the EPA-approved technical drawings included in the *Final Removal Design/Removal Action Work Plan for Former Oxbow Areas J and K* (September 2005), as modified in the *Addendum to Final Removal Design/Removal Action Work Plan for Former Oxbow Areas J and K* (April 2006). Overall, approximately 1,955 cubic yards of soil were removed from Former Oxbow Areas J and K and placed within the appropriate On-Plant Consolidation Area. The *Final Completion Report for Former Oxbow Areas J and K Removal* was submitted to EPA on May 13, 2008, and EPA issued a Certificate of Completion for this RAA on June 3, 2008.

1.2.2 Overview of Hydrogeologic Conditions at the Site

In general, two unconsolidated hydrogeologic units are present within GMA 2. These units are briefly described below:

Surficial Deposits - This unit generally consists of heterogeneous fill materials and alluvial sands and gravels. These sands and sandy gravels are well-sorted and were deposited as glacial outwash and/or in association with recent depositional processes within the Housatonic River. Isolated peat deposits are also present, typically at depths corresponding to the bottom elevations of the river and the former oxbows. At certain locations within GMA 2, non-native fill materials are present above the alluvial deposits. These fill materials typically consist of sand, gravel, metallic debris, and wood.

The alluvial unit extends from ground surface to depths of at least 25 feet. Fill materials, where present, have been observed to depths down to 10 feet. From a hydrogeologic perspective, the fill and the sand/gravel deposits act as a single unit. The existing monitoring wells within GMA 2 are screened within this unit, as it is the upper and primary water-bearing unit within the GMA. Groundwater is encountered under unconfined conditions within this unit at depths between approximately 4 and 15 feet below ground surface.

Glacial Till - Based on boring results at nearby locations within East Street Area 1-South (within GMA 1), glacial till underlies the alluvial deposits and typically consists of dense silt containing varying amounts of clay, sand, and gravel. Till is generally encountered at depths ranging from approximately 10 to over 40 feet beneath East Street Area 1-South and East Street Area 2-South, further to the west.

The unconsolidated units at GMA 2 overlie bedrock. Based on information obtained from nearby areas, bedrock occurs at depths up to approximately 50 to 60 feet near the Housatonic River. The bedrock consists of white coarse-grained marble associated with the Stockbridge Formation.

Groundwater at GMA 2 generally flows toward the Housatonic River and is primarily influenced by the existing topography and the area's location (adjacent to the river). Figure 3 illustrates typical water table conditions, using groundwater data obtained during the fall 2008 groundwater monitoring event. In general, the depth to groundwater is greater on the northern side of the Housatonic River due to the presence of a steeper riverbank than on the south of the river. The average depth to groundwater at Former Oxbow Area J ranges from approximately 11 feet (in the center portion) to just under 15 feet (to the east and west of the former oxbow). The average depth to groundwater at Former Oxbow Area K ranges from approximately 4 feet (in the northern portion, adjacent to the Housatonic River) to approximately 10 feet (at the southernmost monitoring point).

Hydraulic conductivity data (as previously presented on Table 3 and Appendix C of the Groundwater Quality Monitoring Report for Spring 2002) indicate a wide range in conductivities at each former oxbow area. Hydraulic conductivities at Former Oxbow Area J ranged from 10.44 feet/day (at well GMA2-1) to 139.52 feet per day (at well GMA2-6), with a geometric mean of 45.57 feet per day. At Former Oxbow Area K, hydraulic conductivities varied from 7.98 feet/day (at well GMA2-9) to 138.47 feet per day (at well GMA2-5), with a geometric mean of 43.52 feet per day. The overall geometric mean of the calculated hydraulic conductivity values for GMA 2 is 44.65 feet per day.

Calculated groundwater velocities using the above-referenced hydraulic conductivities, as well as representative horizontal gradients and porosities, range from 0.84 feet per day to 16.74 feet per day to the north of the river, and from 0.53 feet per day to 13.85 feet per day in the southern portion of the GMA. The overall geometric mean of the calculated groundwater velocities at GMA 2 is 4.03 feet per day.

Two surface features may also affect groundwater flow within Former Oxbow Areas J and K. A drainage ditch is present along the western limb of Former Oxbow Area J that extends to the Housatonic River, while a small intermittent creek which extends between the Housatonic River and Goodrich Pond crosses the eastern portion of Former Oxbow Area K. The presence of these surface drainage features may locally influence groundwater flow in their immediate vicinity, but the overall groundwater flow direction is directed toward the Housatonic River.

Monitoring for the presence of NAPL is performed as part of the routine groundwater elevation monitoring activities at this GMA. NAPL has not been observed within any of the GE monitoring wells monitored to date at GMA 2.

1.2.3 Overview of the Nature and Extent of Substances in Groundwater at the Site

Based on current information, the principal potential constituent sources that may have affected or could affect groundwater quality within GMA 2 appear to include the former oxbows and existing or historical commercial businesses located within or upgradient of this GMA. These potential sources are described below.

Former Oxbows - As a result of the straightening of the Housatonic River channel in the late 1930s and early 1940s, Former Oxbows J and K were isolated from the newly formed channel of the river. These oxbows were subsequently filled with materials originating from the GE facility as well as other sources. There are no available records that provide information regarding the specific type or origin of the fill materials, or parties involved in the filling activities. The former oxbow areas are labeled as “disposal areas” on re-channelization drawings developed by the City of Pittsfield in 1940. These areas were publicly accessible and it is likely that a variety of industries and/or individuals contributed fill material. Based on a review of available aerial photographs, it is unclear when these former oxbows were filled. As noted above, GE conducted and has now completed a remediation of the Former Oxbow Areas J and K RAA, and EPA issued a Certificate of Completion for that RAA on June 3, 2008.

Other Sources - Commercial businesses present within or upgradient of GMA 2, including a gas station, restaurant, and an automotive electrical repair shop located within Former Oxbow Area J, may be contributing sources of groundwater constituents to GMA 2.

Very few constituents were consistently detected in groundwater at GMA 2. At most locations, the observed detections were sporadic temporally and spatially, resulting in an apparent scattered distribution of isolated and occasionally-detected constituents. Low levels of certain VOCs and PCBs have been detected on a more frequent basis at isolated locations, generally in or near the western portion of Oxbow Areas J and K.

1.2.4 Overview of Groundwater Investigation Activities at GMA 2

In February 2001, GE submitted a *Baseline Monitoring Program Proposal for Former Oxbows J and K Groundwater Management Area* (GMA 2 Baseline Monitoring Proposal). The GMA 2 Baseline Monitoring Proposal summarized the hydrogeologic information available at that time for GMA 2 and proposed groundwater monitoring activities for the baseline monitoring period at this GMA. EPA provided conditional approval of the GMA 2 Baseline Monitoring Proposal by letter of September 6, 2001. Thereafter, certain modifications were made to the GMA 2 baseline monitoring program as a result of EPA approval conditions and/or findings during field reconnaissance of the selected monitoring locations and, subsequently, during implementation of the baseline monitoring program.

The baseline monitoring program, which was initiated in spring 2002, consisted of four semi-annual groundwater quality sampling events (with intervening quarterly groundwater elevation monitoring) followed by preparation and submittal of semi-annual reports summarizing the groundwater monitoring results, comparing the groundwater results with applicable Performance Standards, and, as appropriate, proposing modifications to the monitoring program. The fourth baseline monitoring report for GMA 2 entitled *Groundwater Management Area 2 Baseline Groundwater Quality Interim Report for Fall 2003* (Fall 2003 GMA 2 Groundwater Quality Report), was submitted to EPA on January 30, 2004**.**

As noted above, Section 6.1.3 of Attachment H to the SOW provides that if the two-year baseline monitoring period ends prior to the completion of soil-related response actions at all the RAAs in a GMA, GE may make a proposal to EPA to modify and/or extend the Baseline Monitoring Program based on the results of the initial assessment and the estimated timing of future response actions at the RAAs in the GMA. The approved GMA 2 Baseline Monitoring Proposal also allowed GE to propose a modification and/or extension of the baseline monitoring program based on the results of the initial assessment and the estimated timing of future response actions. Therefore, as the soil-related Removal Actions at the RAA within GMA 2 were not yet complete, the Fall 2003 GMA 2 Groundwater Quality Report included a proposal to modify and extend baseline groundwater quality monitoring activities at GMA 2 (under a program referred to as the interim monitoring program) until such time as the soil-related Removal Actions at the GMA 2 RAA were completed and the needs for a long-term groundwater quality monitoring program were fully delineated.

EPA conditionally approved the Fall 2003 GMA 2 Groundwater Quality Report in a letter dated May 13, 2004. Under the approved interim monitoring program, annual water quality sampling (alternating between the spring and fall seasons) and semi-annual water level monitoring at selected GMA 2 wells was initiated in spring 2004. Subsequent interim sampling events were conducted in fall 2005 and spring 2006.

Pursuant to GE's July 2006 *Groundwater Management Area 2 Groundwater Quality Interim Report for Spring 2006* (Spring 2006 GMA 2 Groundwater Quality Report), and EPA's conditional approval letter dated November 16, 2006, GE submitted a final baseline assessment report and proposal for long-term groundwater quality monitoring at GMA 2 in June 2007. The GMA 2 Long-Term Monitoring Proposal provided a summary of the sampling activities conducted in spring 2007 at GMA 2, evaluated the overall groundwater quality at the GMA pursuant to the requirements of Attachment H of the SOW, and contained a proposal for long-term groundwater quality monitoring activities. Locations were considered for inclusion in the long-term program if:

- Exceedances of applicable MCP GW-2 or GW-3 standards were reported during the baseline monitoring program.

- The well is located downgradient of a location where exceedances of applicable MCP GW-2 or GW-3 standards were reported during the baseline monitoring program.

- A review of the available data indicates the potential presence of an increasing trend in the concentrations of certain constituents at levels approaching the applicable MCP GW-2 or GW-3 standards

In that report, as a result of the evaluations, GE proposed to conduct long term groundwater monitoring at seven wells in GMA 2 (i.e., wells GMA2-1, GMA2-2, GMA2-3, GMA2-4, GMA2-6, GMA2-9, and J-1R). In EPA's October 9, 2007 conditional approval letter, EPA directed GE to install one new monitoring well (GMA 2-10) and add that well, plus existing well OJ-MW-2, to the long-term monitoring program.

GE conducted the initial round of the required long-term groundwater elevation monitoring and sampling activities in fall 2007, including the installation and sampling of well GMA 2-10. The results of those activities were described in the *Groundwater Management Area 2 Long-Term Monitoring Program Monitoring Event Evaluation Report for Fall 2007* (Fall 2007 Monitoring Event Evaluation Report) submitted to EPA on March 20, 2008 and conditionally approved on April 15, 2008. In response to conditions contained in EPA's April 15, 2008 letter, an *Addendum Monitoring Event Evaluation Report for Fall 2007* (Fall 2007 Addendum) was submitted to EPA on May 14, 2008 and conditionally approved on July 30, 2008.

GE conducted the second long-term groundwater sampling event between April 25 and 28, 2008 and the results of those activities were presented in GE's August 1, 2008 *Groundwater Management Area 2 Long-Term Monitoring Program Monitoring Event Evaluation Report for Spring 2008* (Spring 2008 Monitoring Event Evaluation Report), which was conditionally approved by EPA in a letter dated October 22, 2008. That report also presented an evaluation of the groundwater quality monitoring results from GMA 2 relative to revisions to the MCP that became effective on February 14, 2008 and proposed several modifications to the long-term monitoring program based on the results of that evaluation.

With EPA approval, GE initiated the fall 2008 sampling activities in advance of receipt of EPA's conditional approval of the Spring 2008 Monitoring Event Evaluation Report. Specifically, the fall 2008 sampling activities were conducted on October 20, 2008 and additional sampling was performed on November 13, 2008. Groundwater elevation monitoring was conducted on October 29, 2008. A description of those activities, the results obtained, and GE's assessments of those results, including any modifications to the long-term monitoring program at GMA 2, are contained in this *Groundwater Management Area 2 Long-Term Monitoring Program Monitoring Event Evaluation Report for Fall 2008* (Fall 2008 Monitoring Event Evaluation Report).

1.3 Format of Document

The remainder of this report is presented in five sections. Section 2 describes the groundwater-related activities performed at GMA 2 in fall 2008. Section 3 presents the analytical results obtained during the fall 2008 sampling event, including a summary of the applicable groundwater quality Performance Standards identified in the CD and SOW, and a comparison of the fall 2008 results to those Performance Standards. Section 4 provides an overall assessment of groundwater quality at GMA 2 since initiation of baseline monitoring activities in spring 2002, including an evaluation of the analytical dataset for the wells that were sampled as part of the fall 2008 sampling event, and an assessment of the need for follow-up investigations or response actions. Finally, Section 5 summarizes the schedule for future field and reporting activities related to groundwater quality at GMA 2.

2. Fall 2008 Field and Analytical Procedures

2.1 General

The activities conducted as part of the baseline/interim groundwater monitoring program in fall 2008, and summarized herein, involved the measurement of groundwater levels and the collection and analysis of groundwater samples at select monitoring wells within GMA 2 as summarized in Table 1. A summary of construction details for the GMA 2 wells that were monitored and/or sampled during fall 2008 is provided in Table 2. The field sampling data for the fall 2008 sampling event are presented in Appendix A. This section discusses the field procedures used to perform the activities listed above, as well as the methods used to analyze the groundwater samples. All activities were performed in accordance with GE's approved *Field Sampling Plan/Quality Assurance Project Plan* (FSP/QAPP).

2.2 Groundwater Elevation Monitoring

Groundwater elevations were collected from the 13 wells listed in Table 3, plus one Housatonic River surface water monitoring point, during the fall 2008 groundwater monitoring elevation event performed on October 29, 2008. Groundwater elevations in fall 2008 were, on average, approximately 1.63 feet lower than the elevations measured during fall 2007 for wells gauged during both monitoring events. The fall 2008 data presented in Table 3 were used to prepare a detailed groundwater elevation contour map for fall 2008 (Figure 3). Those groundwater contours are also illustrated on Figure 4, along with groundwater elevation data obtained in fall 2008 from areas adjacent to GMA 2. A summary of all applicable GMA 2 groundwater elevation data collected in fall 2008 can be found in Appendix D, Table D-1. Per Condition 2 of EPA's October 22, 2008 letter to GE, Housatonic River discharge data at the USGS Gauging Station in Coltsville, Massachusetts was recorded on each date that activities were conducted at GMA 2. That flow data is summarized in Table D-2 of Appendix D.

As shown on Figure 3 and consistent with prior monitoring data, groundwater flow patterns at GMA 2 generally reflects the topography of the site with flow towards the Housatonic River. Overall, the hydraulic gradient to the south of the river is relatively flat in comparison to the portion of GMA 2 located north of the river. In particular, a relatively steep groundwater gradient is observed at the northeast corner of the Former Oxbow J Area as a result of a change in topography between well OJ-MW-1 and wells GMA2-7 and OJ-MW-2.

As shown on Figure 4, the northern (Former Oxbow Area J) portion of GMA 2 is downgradient from parts of both GMA 1 and GMA 4. Specifically, groundwater from the eastern portion of GMA 1 appears to flow toward the Housatonic River across the western portion of GMA 2, while groundwater from the western and central portions of GMA 4 flows

across the central and eastern sections of GMA 2. A groundwater divide generally extending north to south has been identified along the southern boundary of GMA 4, with its high point at well 78-5R. This divide appears to extend southward to East Street, as evidenced by a three- to four-foot groundwater elevation difference between wells OJ-MW-1 and GMA4-5. This groundwater divide may serve to limit groundwater migration from the eastern portion of GMA 4 toward GMA 2.

In addition, monitoring for the potential presence of NAPL was performed as part of these well gauging events. No NAPL was observed during these monitoring events or any of the previous monitoring events conducted by GE at GMA 2.

2.3 Groundwater Sampling and Analysis

Groundwater samples for VOC analysis were collected on October 20, 2008 from the two existing GMA 2 wells subject to long-term monitoring. On November 13, 2008, GE collected samples from one well for PCB analyses that were omitted from the initial sampling event. Samples were collected for analysis for the constituents shown in Table 1.

Low-flow sampling techniques using a bladder pump or peristaltic pump were utilized for purging the wells and collection of groundwater samples during this sampling event. Each monitoring well was purged utilizing low-flow sampling techniques until field parameters (including temperature, pH, specific conductivity, oxidation-reduction potential, dissolved oxygen, and turbidity) stabilized. Field parameters were measured in combination with the sampling activities at the monitoring wells. The field parameter measurements are presented in Table 4 and the field sampling records are provided in Appendix A. A general summary of the field measurement results during the fall 2008 monitoring event is provided below:

Parameter	Units	Range
Turbidity	Nephelometric turbidity units (NTU)	1 to 3
pH	pH units	6.69 to 6.74
Specific Conductivity	Millisiemens per centimeter	1.028 to 1.427
Oxidation-Reduction Potential	Millivolts	-41.4 to -181.7
Dissolved Oxygen	Milligrams per liter	1.01 to 1.56
Temperature	Degrees Celsius	12.60 to 15.34

As shown above, for this sampling event, none of the groundwater extracted from the monitoring wells had turbidity levels greater than 3 NTU. These results indicate that the procedures utilized during this sampling event were effective in obtaining groundwater samples with low turbidity.

The collected groundwater samples were submitted to SGS Environmental Services, Inc. (SGS) in Wilmington, North Carolina for laboratory analysis. The samples taken from wells GMA2-10 and OJ-MW-2 were analyzed for VOCs (using EPA method 8260B) while a filtered sample from well GMA2-10 was also analyzed for PCBs (using EPA method 8082).

Following receipt of the analytical data from the laboratory, the preliminary results were reviewed for completeness and compared to the Massachusetts Contingency Plan (MCP) Method 1 GW-2 (where applicable) and GW-3 standards, and to the MCP Upper Concentration Limits (UCLs) for groundwater. The preliminary analytical results were presented in the next monthly report on overall activities at the GE-Pittsfield/Housatonic River Site, along with the identification, when applicable, of sample results above the applicable MCP Method 1 standards and/or UCLs.

Finally, the data were validated in accordance with the FSP/QAPP and the validated results were utilized in the preparation of this report. As discussed in the validation report provided as Appendix C, 99.5% of the fall 2008 groundwater quality data are considered to be useable, which is greater than the minimum required usability of 90% as specified in the FSP/QAPP. The PCB sample results were found to be 100% usable. VOC sample results were found to be 98.9% usable. The only rejected data were the VOC results for 2-chloroethylvinylether, acetone, and acrolein from one groundwater sample (GMA2-10), which were rejected due to MS/MSD recovery deviations.

3. Fall 2008 Groundwater Analytical Results

3.1 General

A description of the fall 2008 groundwater analytical results is presented in this section. Tables 5 and 6 provide a comparison of the concentrations of all detected constituents with the currently applicable groundwater quality Performance Standards established in the CD and SOW, while Table 7 presents a comparison of the concentrations of detected constituents with the UCLs for groundwater. These Performance Standards are described in Section 3.2 below and an assessment of the fall 2008 results relative to those groundwater quality Performance Standards and the UCLs is provided in Section 3.4.

3.2 Groundwater Quality Performance Standards

The Performance Standards applicable to response actions for groundwater at GMA 2 are set forth in Section 2.7 and Attachment H (Section 4.1) of the SOW. In general, the Performance Standards for groundwater quality are based on the groundwater classification categories designated in the MCP. The MCP identifies three potential groundwater categories that may be applicable to a given site. One of these, GW-1 groundwater, applies to groundwater that is a current or potential source of potable drinking water. None of the groundwater at any of the GMAs at the Site is classified as GW-1; however, the remaining MCP groundwater categories are applicable to GMA 2 and are described below:

- GW-2 groundwater is defined as groundwater that is a potential source of vapors to the indoor air of buildings. Groundwater is classified as GW-2 if it is located within 30 feet of an existing occupied building and has an average annual depth below ground surface (bgs) of 15 feet or less. Under the MCP, volatile constituents present within GW-2 groundwater represent a potential source of organic vapors to the indoor air of the overlying and nearby occupied structures.

- GW-3 groundwater is defined as groundwater that discharges to surface water. By MCP definition, all groundwater at a site is classified as GW-3 since it is considered to ultimately discharge to surface water. In accordance with the CD and SOW, all groundwater at GMA 2 is considered as GW-3.

The CD and the SOW allow for the establishment of standards for GW-2 and GW-3 groundwater at the GMAs through use of one of three methods, as generally described in the MCP. The first, known as Method 1, consists of the application of pre-established numerical “Method 1” standards set forth in the MCP for both GW-2 and GW-3 groundwater (310 CMR 40.0974). These “default” standards have been developed to be conservative

and will serve as the initial basis for evaluating groundwater at GMA 2. The current MCP Method 1 GW-2 and GW-3 standards for the constituents detected in the fall 2008 sampling event are listed in Tables 5 and 6, respectively.

For constituents for which Method 1 standards do not exist, the MCP provides procedures, known as Method 2, for developing such standards (Method 2 standards) for both GW-2 (310 CMR 40.0983(2)) and GW-3 (310 CMR 40.0983(4)) groundwater. For such constituents that are detected in groundwater during the baseline monitoring program, Attachment H to the SOW states that in the Baseline Monitoring Program Final Report, GE must propose to develop Method 2 standards using the MCP procedures or alternate procedures approved by EPA, or provide a rationale for why such standards need not be developed.

For constituents whose concentrations exceed the applicable Method 1 (or Method 2) standards, GE may develop and propose to EPA alternative GW-2 and/or GW-3 standards based on a site-specific risk assessment. This procedure is known as Method 3 in the MCP. Upon EPA approval, these alternative risk-based GW-2 and/or GW-3 standards may be used in lieu of the Method 1 (or Method 2) standards. Of course, whichever method is used to establish such groundwater standards, GW-2 standards will be applied to GW-2 groundwater and GW-3 standards will be applied to GW-3 groundwater.

On February 14, 2008 MDEP implemented revised Method 1 numerical standards for a number of constituents in groundwater, and those standards were used in the preparation of this report. In addition, in its July 30, 2008 conditional approval letter related to the Fall 2007 Monitoring Report, EPA specified that the low-range guidance values developed in that report for cobalt and copper should represent the Method 2 GW-3 standards for these metals at all of the GE Pittsfield GMAs, but also concurred with GE's conclusion that no additional monitoring related to cobalt or copper is warranted at GMA 2. As such, no samples were analyzed for those parameters in fall 2008.

Based on consideration of the above points, the specific groundwater quality Performance Standards for GMA 2 consist of the following:

1. At monitoring wells designated as compliance points to assess GW-2 groundwater (i.e., groundwater located at an average depth of 15 feet or less from the ground surface and within 30 feet of an existing occupied building), groundwater quality shall achieve any of the following:

a) the Method 1 GW-2 groundwater standards set forth in the MCP (or, for constituents for which no such standards exist, Method 2 GW-2 standards once developed, unless GE provides and EPA approves a rationale for not developing such Method 2 standards);

b) alternative risk-based GW-2 standards developed by GE and approved by EPA as protective against unacceptable risks due to volatilization and transport of volatile chemicals from groundwater to the indoor air of nearby occupied buildings; or

c) a condition, based on a demonstration approved by EPA, in which constituents in the groundwater do not pose an unacceptable risk to occupants of nearby occupied buildings via volatilization and transport to the indoor air of such buildings.

2. Groundwater quality shall ultimately achieve the following standards at the perimeter monitoring wells designated as compliance points for GW-3 standards:

a) the Method 1 GW-3 groundwater standards set forth in the MCP (or, for constituents for which no such standards exist, Method 2 GW-3 standards once developed, unless GE provides and EPA approves a rationale for not developing such Method 2 standards); or

b) alternative risk-based GW-3 standards proposed by GE and approved by EPA as protective against unacceptable risks in surface water due to potential migration of constituents in groundwater.

These Performance Standards are to be applied to the results of the individual monitoring wells included in the monitoring program. Several monitoring wells have been designated as the compliance points for attainment of the Performance Standards identified above. Those compliance wells that are sampled under the long-term monitoring program are identified in Table 1.

In addition to the Performance Standards described above, analytical results from both groundwater monitoring wells sampled during the fall 2008 sampling event were compared to the MCP UCLs for groundwater.

3.3 Fall 2008 Groundwater Quality Results

The following subsections provide an overview of the fall 2008 analytical results from the GMA 2 monitoring wells for both constituent groups analyzed.

3.3.1 VOC Results

Groundwater samples collected from two groundwater quality monitoring wells were analyzed for VOCs during the fall 2008 sampling event. The VOC analytical results are summarized in Table 7 (for detected constituents compared to MCP UCLs for groundwater) and Table B-1 of Appendix B (for all constituents analyzed). Vinyl chloride was the only VOC detected at well GMA2-10 during the fall 2008 sampling event at an estimated concentration of 0.00032 parts per million (ppm). Two VOCs, trichloroethene (TCE) and vinyl chloride, were detected at well OJ-MW-2. TCE was detected at a concentration of 0.012 ppm in both the primary and duplicate samples analyzed from this well, while vinyl chloride was detected at an estimated concentration of 0.0024 ppm, and a duplicate concentration of 0.0021 ppm. This is the second time that vinyl chloride has been detected in well OJ-MW-2, and the first time it showed a slight exceedance of the GW-2 standard for vinyl chloride. As shown in Tables 5 and 6 and discussed below, the vinyl chloride result from well OJ-MW-2 was the only constituent detected at a level exceeding an applicable Method 1 GW-2 or Method 1 GW-3 standard during the fall 2008 sampling round.

3.3.2 PCB Results

A filtered groundwater sample from GMA2-10 was analyzed for PCBs as part of the fall 2008 sampling event. The PCB analytical results are presented in Tables 7 and Table B-1 of Appendix B. PCBs were not detected at well GMA2-10, the only well sampled for PCBs.

3.4 Evaluation of Groundwater Quality – Fall 2008

For the purpose of assessing current groundwater conditions, the analytical results from the fall 2008 groundwater sampling event were compared to the applicable groundwater Performance Standards for GMA 2. These Performance Standards are described in Section 3.2 above and are currently based on the MCP Method 1 GW-2 and/or GW-3 standards. The following subsections discuss the fall 2008 groundwater analytical results in relation to these Performance Standards, as well as in relation to the MCP UCLs for groundwater. In support of those discussions, Tables 5 and 6 provide a comparison of the concentrations of detected constituents with the currently applicable GW-2 and GW-3 standards, respectively, while Table 7 presents a comparison of the concentrations of detected constituents with the groundwater UCLs.

3.4.1 Fall 2008 Groundwater Results Relative to GW-2 Performance Standards

During the fall 2008 interim groundwater quality monitoring event at GMA 2, groundwater samples collected from two wells designated as GW-2 monitoring locations (i.e., wells GMA2-10 and OJ-MW-2) were analyzed to assess compliance with the GW-2 Performance Standards.

The fall 2008 groundwater analytical results for all detected constituents subject to MCP Method 1 GW-2 standards are presented in Table 5, along with a comparison of those results to the applicable GW-2 standards. At well OJ-MW-2, vinyl chloride was the only VOC detected at a concentration greater than its respective GW-2 standard. The vinyl chloride concentration at that well (estimated concentration of 0.0024 ppm and a duplicate concentration of 0.0021 ppm) was slightly above the MCP Method 1 GW-2 standard of 0.002 ppm. This was the first time that the GW-2 standard for this constituent was exceeded at this location. No PCBs were detected at well GMA2-10 in fall 2008, which was the first time that this well was sampled for this constituent.

Neither of the two GW-2 wells analyzed for VOCs exhibited total VOC concentrations above 5 ppm (the level specified in the SOW as a notification level for GW-2 wells located within 30 feet of a school or occupied residential structure and as a trigger level for the proposal of interim response actions).

3.4.2 Fall 2008 Groundwater Results Relative GW-3 Performance Standards

Groundwater samples were collected from two wells designated as GW-3 monitoring points during the fall 2008 interim sampling event. The fall 2008 groundwater analytical results for all constituents detected in these wells and a comparison of those results with the MCP Method 1 GW-3 standards are presented in Table 6. The comparisons set forth in Table 6 show that no constituents were found at levels above their respective MCP Method 1 GW-3 standards in groundwater samples collected in fall 2008.

3.4.3 Comparison of Fall 2008 Groundwater Results to Upper Concentration Limits

In addition to comparing the fall 2008 groundwater analytical results with applicable MCP Method 1 GW-2 and GW-3 standards, the analytical results from all wells that were sampled were compared with the UCLs for groundwater specified in the MCP (310 CMR 40.09996(7)). These comparisons, presented in Table 7, show that none of the detected constituents exceeded its respective UCL.

3.5 NAPL Evaluation

Consistent with prior monitoring results, no NAPL was observed in any of the GMA 2 monitoring wells during the groundwater elevation and sampling activities conducted in fall 2008.

During the Long-Term Monitoring Program, if NAPL is observed to be discharging to any surface water or creating a sheen on the water in a location in which such NAPL discharge was not previously observed or measures are not in place to effectively contain the sheen, GE will notify EPA and MDEP within two hours of obtaining knowledge of such observation. This will be followed by written notice to EPA within seven (7) days. The written notification will include a proposal to EPA for interim response actions to contain such discharge. Upon EPA approval, GE will conduct the approved interim response actions to contain the NAPL discharge.

Also under the approved GMA 2 Long-Term Monitoring Proposal, if NAPL is observed to be discharging to any surface water or creating a sheen on the water in a location in which such NAPL discharge was previously observed and measures are in place to contain the sheen, GE will notify EPA of the continued presence of such NAPL in the next monthly progress report for overall work at the Site.

For groundwater, if a NAPL thickness of greater than or equal to 1/2-inch is observed in any monitoring well, GE will notify EPA and MDEP within seventy-two hours of obtaining knowledge of such a condition, unless such conditions are consistent with the types, nature, and quantities of NAPL which were previously observed and reported to the Agencies. This notification will be followed by written notice to the EPA within 60 days. The written notification will include a proposal to EPA for interim response actions to be conducted which may include NAPL sampling, additional assessment/monitoring, or NAPL removal activities. Upon EPA approval, GE will conduct the approved interim response actions. If a NAPL thickness of greater than or equal to 1/8-inch, but less than 1/2-inch is observed in a monitoring well, GE will notify EPA and MDEP in the next monthly progress report, unless the results are consistent with the types, nature, and quantities of NAPL which have previously been observed and reported to the Agencies.

4. Assessment of Groundwater Quality

4.1 General

This report constitutes the third monitoring event evaluation report submitted since commencement of the GMA 2 long-term groundwater monitoring program. The information presented herein is based on the laboratory results obtained during the course of the GMA 2 baseline and long-term groundwater monitoring programs.

For the purpose of assessing overall groundwater conditions at GMA 2, the analytical results from the fall 2008 groundwater sampling event were compared to the applicable groundwater Performance Standards for GMA 2, as described in Section 3.4 above. In addition, GE has compared the fall 2008 results to prior data to evaluate variations and/or potential trends in constituent concentrations in GMA 2 groundwater.

The following sections present the results of those overall assessments of groundwater quality, including an evaluation of the need for follow-up investigations, assessments, interim response actions, or other modifications to the long-term monitoring program.

4.2 Evaluation of Variations in Groundwater Quality

For the purpose of assessing current groundwater conditions, the analytical results from the fall 2008 groundwater sampling event were compared to prior baseline and long-term sampling events. In addition, the variability of the data was evaluated. The results of these comparisons are described below.

4.2.1 Comparison of Fall 2008 Analytical Results to Prior Data

Graphs illustrating historical total VOC concentrations for the wells sampled and analyzed for those constituents during fall 2008 at GMA 2 are presented in Appendix D. In addition, Appendix D contains graphs of historical TCE and Vinyl Chloride concentrations at well OJ-MW-2, as this well is included in the long-term monitoring program primarily to assess TCE concentrations in that portion of the GMA. Since the fall 2008 sampling event represents the first time that samples from well GMA2-10 were analyzed for PCBs (none were detected), no graph was prepared for this result.

VOCs have been detected at well OJ-MW-2 during each monitoring round since the inception of the baseline monitoring program in fall 2002. Prior to 2008, TCE was the only VOC detected at this well. The fall 2008 concentration of TCE (0.012 ppm) is within the range observed during prior baseline and long-term sampling events (i.e., 0.0029 ppm to 0.015 ppm) and is slightly above the average observed concentration of 0.0103 ppm. The concentration of TCE is, moreover, significantly below both the GW-2 and GW-3 standards of 0.03 ppm and 5 ppm, respectively. Vinyl chloride was detected in well OJ-MW-2 for the first time in spring 2008 at an estimated concentration of 0.00095 ppm and was again observed in fall 2008. However, this time the concentration of vinyl chloride (estimated concentration of 0.0024 ppm and a duplicate concentration of 0.0021 ppm) increased to a level just above the GW-2 standard of 0.002 ppm.

Vinyl chloride was the only VOC detected at well GMA2-10 in fall 2008. The initial sampling event at this well in fall 2007 found low level detections of trans-1,2-dichloroethene and vinyl chloride at estimated concentrations of 0.00034 ppm and 0.00047 ppm, respectively. No detections of any VOCs were found during the spring 2008 round. In the fall 2008 round, a low level detection of vinyl chloride was again observed, at an estimated concentration of 0.00032 ppm, which is well below the GW-2 standard for vinyl chloride.

4.2.2 Comparison of Fall 2008 Analytical Results to Previous Sampling Round

Table D-2 in Appendix D presents a comparison of the fall 2008 analytical results to the historical sampling data collected from each of the two wells for constituents that were analyzed during the fall 2008 sampling event. As seen in Table D-2, the fall 2008 total VOC (0.014 ppm) and TCE (0.012 ppm) concentrations at well OJ-MW-2 are slightly lower than the historical high concentrations of 0.015 ppm (for both total VOCs and TCE) observed during the previous fall sampling event conducted in 2007 and slightly above the concentrations observed during the spring 2008 sampling event (total VOC concentration of 0.013 ppm and TCE concentration of 0.012 ppm). As discussed above, vinyl chloride was not detected in fall 2007 and was first observed in spring 2008 at an estimated concentration of 0.00095 ppm. The fall 2008 vinyl chloride concentration (estimated concentration of 0.0024 ppm and a duplicate concentration of 0.0021 ppm) was approximately double the spring 2008 result. The fall 2008 total VOC concentration at well OJ-MW-2 was slightly higher than the historical arithmetic average of 0.0110 ppm. TCE comprises 0.012 ppm of the total 0.014 ppm VOCs in this well in fall 2008, as discussed further in Section 4.3. Apart from the recent low-level detections of vinyl chloride, there have been no significant changes in VOC or TCE concentrations in this well. [As noted in Condition 3 of EPA's October 22, 2008 letter conditionally approving the Spring 2008 Monitoring Event Evaluation Report, the last sentence of the second paragraph of Section 4.2.2 of that report contained a typographical error in referring to TOC instead of VOC.]

At well GMA2-10, only one VOC, vinyl chloride, was detected in the fall 2008 sampling round. VOCs have only been detected in two of the three sampling events (fall 2007 and fall 2008) for this well. No VOCs were detected during the spring 2008 sampling event. In fall 2008, the vinyl chloride concentration was estimated at 0.00032 ppm, which is slightly below the estimated concentration of 0.00047 detected in fall 2007. The fall 2008 concentration of 0.00032 is below the arithmetic average for vinyl chloride at well GMA2-10 of 0.000430 ppm. The only other VOC previously detected at this well was trans-1,2-dichloroethene, which was detected at an estimated concentration of 0.00034 ppm in fall 2007, but was not observed in fall 2008.

As discussed above, PCBs were not detected at well GMA2-10 during the fall 2008 event, which is the first time this well has been sampled for PCBs.

4.2.3 Evaluation of Variability in Data

To evaluate the potential presence of seasonal trends in the groundwater quality data at GMA 2, GE has reviewed the analytical data from the wells included in the long-term monitoring program, particularly well OJ-MW-2, which has been sampled on several occasions. Samples from well GMA2-10 have only been analyzed for VOCs during three sampling events and for PCBs for one event; therefore, insufficient data has been collected to fully assess variability at this well at the present time. Inspection of the historical concentration graphs for well OJ-MW-2 contained in Appendix D indicates that, for both TCE and Total VOCs, the data collected in the spring vs. fall seasons at GMA 2 are within the same order of magnitude since the initiation of long-term monitoring in fall 2007. Earlier monitoring results at this well (i.e., April 2002 – May 2004) exhibited apparently lower concentrations during the spring seasons as compared to the fall, but the available baseline data is limited (spring samples were collected in 2002 and 2004, while fall samples were collected in 2002 and 2003). Since the beginning of the Long-Term Monitoring Program in fall 2007, no seasonal trends have been apparent and the spring 2008 results were very similar to both fall 2007 and fall 2008.

Based on these updated preliminary evaluations, GE does not believe that seasonal variability is significantly affecting the data at GMA 2.

4.3 Statistical Assessment of Data

To assess potential trends in groundwater constituent concentrations over time (i.e., long-term increasing or decreasing concentrations) as well as seasonal cycles, various statistical methods can be utilized depending on the extent of the overall sampling period and the frequency of sampling events within the sampling period. Graphical representations such as a simple plot of concentration data versus time may reveal long-term cyclical patterns as

well as pulses, both of which may explain temporal trends. As described in the GMA 2 Long-Term Monitoring Proposal, three statistical techniques may be utilized to evaluate temporal trends in GMA 2 groundwater and to determine the statistical significance of any potential trends that are identified: (1) Mann-Kendall Test; (2) Sen's slope estimator; and (3) Seasonal Kendall Tau estimator. The need for such statistical evaluations will be assessed as the long-term monitoring program progresses and will be summarized in the Long-Term Trend Evaluation Reports for GMA 2 as appropriate.

GE has prepared a general summary of the analytical results for all wells/constituents included in the long-term monitoring program. The summary statistics of the analytical data for the GMA 2 wells where long-term monitoring is being conducted are contained in Appendix E and are discussed below.

Two monitoring wells (GMA2-10 and OJ-MW-2) were analyzed for VOCs as part of the long-term monitoring program in fall 2008. As shown in Table E-1 in Appendix E, the VOCs that have been detected at GMA2-10 were observed at concentrations an order of magnitude or more below the applicable GW-2 standards and the fall 2008 concentrations are all below the average values for each constituent. As shown in Table E-2 in Appendix E, TCE has been detected at well OJ-MW-2 during each of seven sampling events that have been conducted and, until spring 2008, was the only VOC that has been found at this location. The maximum TCE concentration observed (0.015 ppm) is equal to one-half of the applicable GW-2 standard for this constituent (0.03 ppm). The arithmetic average TCE concentration at well OJ-MW-2 (0.0105) is less than one-half of that standard and similar to the concentration observed in fall 2008. Vinyl chloride was detected at this well for the second time in fall 2008 at a concentration of 0.0024 ppm. This concentration is, for the first time, slightly above the GW-2 standard of 0.002 ppm. The arithmetic average vinyl chloride concentration at well OJ-MW-2 (0.00111) is approximately one-half of that standard.

4.4 Overall Assessment of Groundwater Quality Data

The following subsections provide an overview of the groundwater quality data at GMA 2, focused on the constituents and locations that are included in the long-term monitoring program and/or were sampled in fall 2008. In addition, the fall 2008 results at GMA 2 are assessed relative to monitoring results from the portions of GMA 1 and GMA 4 that are adjacent to and upgradient of GMA 2 and were also sampled in fall 2008 or during previous sampling events. Specifically, available VOC and PCB data from the eastern portion of GMA 1 (i.e., well GMA1-18 and ES1-5) and the western portion of GMA 4 (i.e., well OPCA-MW-1RR, H78B-13 and 13R) were compared with current and historical data from the western portion of the Former Oxbow Area J portion of GMA 2 (i.e., wells GMA2-1, GMA2-2, GMA2-3, GMA2-6, GMA2-10, and J-1R). Downgradient data from the central portion of GMA 4 (i.e., well OPCA-MW-2R and OPCA MW-3) and eastern portions of GMA 4 (i.e.,

wells H78B-16, and H78B-17R) were compared with the data from the eastern portion of the Former Oxbow Area J portion of GMA 2 (i.e., well OJ-MW-2). Although groundwater from wells H78B-16 and H78B-17R most likely does not flow across GMA 2 due to the presence of an apparent groundwater divide between the two areas, GE has included these wells in its analysis as a conservative measure. Well OPCA-MW-2R was installed in July 2008 and will be used to represent the south central portion of GMA 4 with downgradient flow data towards GMA 2. The fall 2008 analytical results for total PCBs (filtered samples), total VOCs, and selected VOCs utilized in this assessment are summarized on Figure 5, along with average historical concentrations of those constituents and the regional groundwater flow contours (also presented on Figure 4).

4.4.1 VOCs

Two wells were included in the fall 2008 long-term sampling event for VOC analysis (i.e., well GMA2-10, located in the western portion of Former Oxbow Area J and well OJ-MW-2, located in the eastern portion of Former Oxbow Area J). Well GMA2-10 was sampled for the second time as part of a sampling round in the spring of 2008 to satisfy an EPA requirement to assess groundwater conditions near an existing building in this area. No VOCs were detected in well GMA2-10 during the spring 2008 sampling event, compared to fall 2008, where a trace concentration of vinyl chloride was detected in the samples analyzed from this well, below the applicable GW-2 standard.

No wells in the adjacent GMA 1 property directly upgradient from well GMA2-10 were analyzed for VOCs in fall of 2008. However, trans-1,2-dichloroethene and vinyl chloride have been detected at GMA 1 well ES1-5 (at levels well below the applicable Performance Standards) during four out of six of the prior sampling events where VOC analyses were performed. These VOCs have never been detected at GMA 4 well H78B-13, H78B-13R, or OPCA-MW-1RR.

Total VOC concentrations at well OJ-MW-2 represent the combined concentrations of TCE and vinyl chloride, the two volatile constituents detected in this well in fall 2008. TCE has been detected in well OJ-MW-2 during each sampling round, as shown in the graph in Appendix D. The concentration of TCE detected in this well has never exceeded the GW-2 standard of 0.03 ppm and was detected at approximately the average historical concentration in fall 2008. Vinyl chloride was detected at this well for the second time in fall 2008 at a concentration of 0.0024 ppm, slightly above the GW-2 criteria of 0.002 ppm. GE will continue to collect additional VOC data from this well during the long-term monitoring program.

In the adjacent GMA 4 property, wells OPCA-MW-2R and OPCA-MW-3 were the nearest wells sampled for VOCs in fall 2008. The only VOC detected in either of the two wells was PCE, a constituent never found in the wells at GMA 2. As shown on Figure 5, TCE was detected in the two most downgradient wells sampled to the east of the groundwater divide at GMA 4 (i.e., wells H78B-16 and H78B-17R) in spring 2006. The spring 2008 TCE concentrations at those GMA 4 wells were approximately three to seven times greater than observed at GMA 2 and a comparison of the historical average TCE concentrations shows a slightly greater disparity between the two areas. Well H78B-16 in the past also contained detectable levels of several other VOCs, including vinyl chloride. In the fall 2008 round, wells H78B-16 and H78B-17R were not sampled because they are only collected every other year. Although these wells appear to be hydraulically separated from GMA 2 by a groundwater divide, GE will continue to assess the concentrations of VOCs at these wells relative to the eastern portion of GMA 2 in future monitoring event evaluation reports during which the wells are sampled. In addition, EPA's January 27, 2009 conditional approval letter related to GE's *Groundwater Management Area 4 Groundwater Quality Monitoring Interim Report for Spring 2008* requested that GE submit a proposal to install a well couplet near the intersection of East Street and Commercial Street and to sample those wells, along with GMA 2 well OJ-MW-1 and Commercial Street Site well GMA4-5, for VOC analysis as part of the interim monitoring program at GMA 4. That proposal will be included in the next report concerning GMA 4. GE will also utilize those results in future assessments to be included in its GMA 2 monitoring event evaluation reports.

4.4.2 PCBs

GMA2-10 was the only GMA 2 well sampled in fall 2008 long-term sampling event for PCB analysis. This was the first time that PCBs were sampled from this location, and no PCBs were detected in the filtered samples analyzed. As discussed in Section 4.3 above, no PCBs have been detected in OJ-MW-2 in any of the previous sampling events in which PCBs had been analyzed for.

One well, GMA1-18 in the adjacent GMA 1 property, upgradient from the western portion of the Former Oxbow Area J portion of GMA 2, was analyzed for PCBs in fall 2008. As at GMA 2, no PCBs were detected in that location, nor were PCBs detected at well OPCA-MW-2R within the central portion of GMA 4.

4.5 Evaluation of the Need for Follow-up Investigations, Assessments, or Interim Response Actions

In fall 2008, the detected VOC concentrations were generally very low in relation to any applicable GW-2 or GW-3 standards, and PCBs were not detected at all. The only constituent that exceeded an applicable Performance Standard was vinyl chloride at well OJ-MW-2, where the MCP GW-2 standard was exceeded slightly and for the first time. Since this was the initial exceedance at this well and only the second detection of vinyl chloride, GE proposes to continue to sample this well under the current long-term monitoring schedule to obtain additional data to evaluate whether the recent detections of vinyl chloride represent an increasing trend at this location. As discussed in Section 7.3 of the Attachment H to the SOW, GE will evaluate the need for the appropriate response actions and will propose any necessary actions for EPA approval in its Long-Term Trend Evaluation Report for GMA 2.

Therefore, no modifications to the long-term monitoring program at GMA 2 are proposed at this time and a summary of the spring 2009 long-term sampling program for GMA 2 is provided in Table 8 and the locations where sampling is proposed are illustrated on Figure 6. However, as discussed in Section 4.4.1 above, GE's upcoming *Groundwater Management Area 4 Groundwater Quality Monitoring Interim Report for Fall 2008* (due to be submitted to EPA on March 2, 2009) will contain a proposal to install a well couplet near the intersection of East Street and Commercial Street and to sample those wells, along with GMA 2 well OJ-MW-1 and Commercial Street Site well GMA4-5, for VOC analysis as part of the interim monitoring program at GMA 4. Following EPA approval, those activities will be coordinated with the GMA 2 sampling events and summarized in future GMA 2 reports, as applicable.

5. Schedule of Future Activities

5.1 Field Activities Schedule

If approved by EPA, GE will conduct the Spring 2009 long-term groundwater quality sampling event at the locations listed in Table 8 in April/May 2009. A round of groundwater elevation monitoring at the GMA 2 wells (and adjacent areas) where such monitoring is required will also be performed at that time.

Prior to performance of these field activities, GE will provide EPA with 7 days advance notice to allow the assignment of oversight personnel. The schedule discussed above was developed under the assumption that GE will be able to obtain permission from the owners of the properties that comprise GMA 2 to conduct the monitoring and sampling activities in advance of their estimated performance dates. If that is not the case, GE will notify EPA of potential schedule impacts due to delays in obtaining such access to the properties.

5.2 Reporting Schedule

GE will continue to provide the results of preliminary groundwater analytical data in its monthly reports on overall activities at the GE-Pittsfield/Housatonic River Site. Those reports will also document the schedules for submittal of the Monitoring Event Evaluation Reports and Long-Term Trend Evaluation Reports, which are contingent upon receipt of the final analytical data packages from the groundwater sampling events, as discussed below.

In accordance with the previously-approved reporting schedule for this GMA, GE proposes to submit the Spring 2009 Monitoring Event Evaluation Report for GMA 2 within 60 days following receipt of the final analytical data packages from the event. That report will present the final, validated spring 2009 sampling results and a brief discussion of the results, including the evaluations of the data and any proposals to further modify the long-term monitoring program, if necessary.

Subsequent semi-annual Monitoring Event Evaluation Reports for GMA 2 will be submitted within 60 days following receipt of the final analytical data packages from each event.

In addition, as previously approved by EPA, a Long-Term Trend Evaluation Report will be submitted in place of a Monitoring Event Evaluation Report, at the completion of the fall 2009 sampling round. Subsequent Long-Term Trend Evaluation Reports for GMA 2 will be prepared at two-year intervals over the duration of the long-term monitoring program at GMA 2. Each such report will be submitted within 75 days following receipt of the final analytical data packages from the latest monitoring event included in the two-year evaluation cycle.

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Tables

Table 1
Fall 2008 Groundwater Quality Monitoring Program

Groundwater Management Area 2 Long-Term Monitoring Program
Monitoring Event Evaluation Report for Fall 2008
General Electric Company - Pittsfield, Massachusetts

Well Number	Monitoring Well Usage	Sampling Schedule	Fall 2008 Analyses	Comments
GMA2-1	Groundwater Elevation Monitoring	None	None	Utilized solely as groundwater elevation monitoring point.
GMA2-2	Groundwater Elevation Monitoring	None	None	Utilized solely as groundwater elevation monitoring point.
GMA2-3	Groundwater Elevation Monitoring	None	None	Utilized solely as groundwater elevation monitoring point.
GMA2-4	Groundwater Elevation Monitoring	None	None	Utilized solely as groundwater elevation monitoring point.
GMA2-5	Groundwater Elevation Monitoring	None	None	Utilized solely as groundwater elevation monitoring point.
GMA2-6	Groundwater Elevation Monitoring	None	None	Utilized solely as groundwater elevation monitoring point.
GMA2-7	Groundwater Elevation Monitoring	None	None	Utilized solely as groundwater elevation monitoring point.
GMA2-8	Groundwater Elevation Monitoring	None	None	Utilized solely as groundwater elevation monitoring point.
GMA2-9	Groundwater Elevation Monitoring	None	None	Utilized solely as groundwater elevation monitoring point.
GMA2-10	GW-2 Sentinel (GW-2 Compliance Well)	Semi-Annual	VOC/ PCBs	Long-term monitoring conducted to verify attainment of GW-2 Performance Standards for VOCs and PCBs.
J-1R	Groundwater Elevation Monitoring	None	None	Utilized solely as groundwater elevation monitoring point.
OJ-MW-1	Groundwater Elevation Monitoring (Upgradient well)	None	None	Utilized solely as groundwater elevation monitoring point.
OJ-MW-2	GW-2 Sentinel/GW-3 Perimeter (GW-2/GW-3 Compliance Well)	Semi-Annual	VOC	Long-term monitoring conducted to verify attainment of GW-2 Performance Standards for VOCs.
Staff Gauge	Surface Water Elevation Monitoring	None	None	Utilized solely as surface water elevation monitoring point.

Notes:

1. The above wells were sampled for the listed parameters during the long-term groundwater quality sampling event conducted in Fall 2008.
2. The remaining wells and staff gauge were utilized for groundwater and surface water elevation monitoring only.

Table 2
Monitoring Well Construction

Groundwater Management Area 2 Long-Term Monitoring Program
Monitoring Event Evaluation Report for Fall 2008
General Electric Company - Pittsfield, Massachusetts

Well ID	Survey Coordinates		Well Diameter (inches)	Ground Surface Elevation (ft AMSL)	Measuring Point Elevatin (ft AMSL)	Depth to Top of Screen (ft bgs)	Screen Length (ft)	Top of Screen Elevation (ft AMSL)	Base of Screen Elevation (ft AMSL)	Average Depth to Groundwater (ft bgs)	Average Groundwater Elevation (ft AMSL)
	Northing	Easting									
GMA2-1	534402.60	135510.20	2.00	988.30	991.36	13.8	10	974.50	964.50	12.2	976.06
GMA2-2	534264.30	135725.00	2.00	988.10	991.19	12.94	10	975.16	965.16	13.9	974.20
GMA2-3	534303.30	135295.50	2.00	991.59	991.48	8.59	10	983.00	973.00	14.7	976.94
GMA2-4	534167.60	135730.00	2.00	980.30	983.41	5.2	10	975.10	965.10	5.5	974.78
GMA2-5	533956.60	135712.80	2.00	986.11	985.85	5.98	10	980.13	970.13	9.9	976.16
GMA2-6	534296.40	135526.00	2.00	986.30	989.73	10.13	10	976.17	966.17	11.4	974.89
GMA2-7	534452.30	136034.50	2.00	989.84	989.64	8.49	10	981.35	971.35	14.7	975.09
GMA2-8	534235.50	135923.10	2.00	978.70	982.30	4	10	974.70	964.70	4.4	974.32
GMA2-9	534006.00	135431.40	2.00	978.10	981.29	4	10	974.10	964.10	4.1	974.03
GMA2-10	534313.80	135583.00	2.00	987.70	990.03	9.00	10	978.70	968.70	12.3	975.39
J-1R	534035.60	135266.60	2.00	988.61	988.25	11.55	10	977.06	967.06	14.9	973.73
OJ-MW-1	534463.40	136305.70	1.00	994.68	994.47	9.3	10	985.38	975.38	12.7	981.96
OJ-MW-2	534318.38	136180.30	1.00	991.90	991.64	9.6	10	982.30	972.30	14.4	977.55
Staff Gauge	--	--	--	--	989.82	--	--	--	--	--	973.20

NOTES:
1. ft AMSL: Feet above mean sea level
2. ft bgs: Feet below ground surface
3. -- indicates that a value does not apply.

Table 3
Groundwater Elevation Data - Fall 2008

Groundwater Managment Area 2 Long-Term Monitoring Program
Monitoring Event Evaluation Report for Fall 2008
General Electric Company - Pittsfield, Massachusetts

Well Number	Location	Fall 2008 (1) Groundwater Elevation (feet AMSL)
GMA2-1	Oxbow Area J	976.38
GMA2-2	Oxbow Area J	975.98
GMA2-3	Oxbow Area J	977.47
GMA2-4	Oxbow Area K	976.20
GMA2-5	Oxbow Area K	976.80
GMA2-6	Oxbow Area J	976.13
GMA2-7	Oxbow Area J	976.30
GMA2-8	Oxbow Area K	976.18
GMA2-9	Oxbow Area K	975.61
GMA2-10	Oxkbow Area J	976.06
J-1R	Oxbow Area J	975.16
OJ-MW-1	Oxbow Area J	982.29
OJ-MW-2	Oxbow Area J	979.48
Staff Gauge	Housatonic River	974.88

Notes:

1. Fall 2008 groundwater and river elevation elevation data was collected on October 29, 2008.
2. feet AMSL = feet above mean sea level.

Table 4
Field Parameter Measurements - Fall 2008

Groundwater Managment Area 2 Long-Term Monitoring Program
Monitoring Event Evaluation Report for Fall 2008
General Electric Company-Pittsfield, Massachusetts

Well Number	Turbidity (NTU)	Temperature (Degrees Celsius)	pH (Standard Units)	Specific Conductivity (mS/cm)	Oxidation-Reduction Potential (mV)	Dissolved Oxygen (mg/L)
GMA2-10	3	12.60	6.74	1.427	-181.7	1.01
OJ-MW-2	1	15.34	6.69	1.028	-41.4	1.56

Notes:

1. Measurements collected during fall 2008 groundwater sampling event performed between October 20, 2008.
2. Well parameters were generally monitored continuously during purging by low-flow techniques. Final parameter readings are presented.
3. NTU - Nephelometric Turbidity Units.
4. mS/cm - Millisiemens per centimeter.
5. mV - Millivolts.
6. mg/L - Milligrams per liter (ppm).

Table 5
Comparison of Groundwater Analytical Results to MCP Method 1 GW-2 Standards

Groundwater Managment Area 2 Long-Term Monitoring Program
Monitoring Event Evaluation Report for Fall 2008
General Electric Company - Pittsfield, Massachusetts
(Results are presented in parts per million, ppm)

Parameter / Sample ID: / Date Collected:	Method 1 GW-2 Standards	GMA2-10 10/20-11/13/08	OJ-MW-2 10/20/08
Volatile Organics			
Trichloroethene	0.03	ND(0.0010)	0.012 [0.012]
Vinyl Chloride	0.002	0.00032 J	0.0024 J [0.0021]
Total VOCs	5	0.00032 J	0.014 J [0.014]
PCBs-Filtered			
None Detected	--	--	NA

Notes:

1. Samples were collected by ARCADIS, and submitted to SGS Environmental Services, Inc. for analysis of volatiles and PCBs (filtered).
2. Samples have been validated as per Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP), General Electric Company, Pittsfield, Massachusetts, ARCADIS (approved March 15, 2007 and re-submitted March 30, 2007).
3. NA - Not Analyzed.
4. ND - Analyte was not detected. The number in parenthesis is the associated detection limit.
5. Only those constituents detected in one or more samples are summarized.
6. Field duplicate sample results are presented in brackets.
7. Shading indicates that value exceeds the Method 1 GW-2 standard.
8. Total VOCs are being compared to the notification level in the SOW of 5 ppm, as there is no GW-2 standard for Total VOCs.

Data Qualifiers:

Organics (volatiles, PCBs)

J - Indicates that the associated numerical value is an estimated concentration.
R - Data was rejected due to a deficiency in the data generation process.

Table 6
Comparison of Groundwater Analytical Results to MCP Method 1 GW-3 Standards

Groundwater Managment Area 2 Long-Term Monitoring Program
Monitoring Event Evaluation Report for Fall 2008
General Electric Company - Pittsfield, Massachusetts
(Results are presented in parts per million, ppm)

Parameter / Sample ID: / Date Collected:	Method 1 GW-3 Standards	GMA2-10 10/20-11/13/08	OJ-MW-2 10/20/08
Volatile Organics			
Trichloroethene	5	ND(0.0010)	0.012 [0.012]
Vinyl Chloride	50	0.00032 J	0.0024 J [0.0021]
PCBs-Filtered			
None Detected	--	--	NA

Notes:

1. Samples were collected by ARCADIS, and submitted to SGS Environmental Services, Inc. for analysis of volatiles and PCBs (filtered).
2. Samples have been validated as per Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP), General Electric Company, Pittsfield, Massachusetts, ARCADIS (approved March 15, 2007 and re-submitted March 30,
3. 2007).
4. NA - Not Analyzed.
5. ND - Analyte was not detected. The number in parenthesis is the associated detection limit.
6. Field duplicate sample results are presented in brackets.
   Only those constituents detected in one or more samples are summarized.

Data Qualifiers:

Organics (volatiles, PCBs)

J - Indicates that the associated numerical value is an estimated concentration.
R - Data was rejected due to a deficiency in the data generation process.

Table 7
Comparison of Groundwater Analytical Results to MCP UCLs for Groundwater

Groundwater Managment Area 2 Long-Term Monitoring Program
Monitoring Event Evaluation Report for Fall 2008
General Electric Company - Pittsfield, Massachusetts
(Results are presented in parts per million, ppm)

Parameter / Sample ID: / Date Collected:	MCP UCL for GroundWater	GMA2-10 10/20-11/13/08	OJ-MW-2 10/20/08
Volatile Organics			
Trichloroethene	50	ND(0.0010)	0.012 [0.012]
Vinyl Chloride	100	0.00032 J	0.0024 J [0.0021]
PCBs-Filtered			
None Detected	--	--	NA

Notes:

1. Samples were collected by ARCADIS, and submitted to SGS Environmental Services, Inc. for analysis of volatiles an PCBs (filtered).
2. Samples have been validated as per Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP), General Electric Company, Pittsfield, Massachusetts, ARCADIS (approved March 15, 2007 and re-submitted March 30, 2007)
3. NA - Not Analyzed.
4. ND - Analyte was not detected. The number in parenthesis is the associated detection limit.
5. Field duplicate sample results are presented in brackets.
6. Only those constituents detected in one or more samples are summarized.

Data Qualifiers:

Organics (volatiles, PCBs)

J - Indicates that the associated numerical value is an estimated concentration.
R - Data was rejected due to a deficiency in the data generation process.

Table 8
Proposed Long Term Groundwater Quality Monitoring Program Activities - Spring 2009

Groundwater Management Area 2 Long-Term Monitoring Program
Monitoring Event Evaluation Report for Fall 2008
General Electric Company - Pittsfield, Massachusetts

Well Number	Monitoring Well Usage	Proposed Sampling Schedule and Analyses		Comments
		Sampling Schedual	Proposed Analyses	
GMA2-10	GW-2 Sentinel (GW-2 Compliance Well)	Semi-Annual	VOC/PCB	Additional long-term sampling to be conducted to verify attainment of GW-2 Performance Standards for VOCs and new GW-2 Performance Standard for PCBs.
OJ-MW-2	GW-2 Sentinel/GW-3 Perimeter (GW-2/GW-3 Compliance Well)	Semi-Annual	VOC	Additional long-term sampling to be conducted to verify attainment of GW-2 Performance Standards for VOCs.

Notes:

1. The wells proposed for long-term groundwater quality sampling under a semi-annual schedule will be sampled for the listed parameters during the spring and fall seasons, generally during the months of April and October. The next scheduled sampling round is proposed to be conducted in Spring 2009.
2. Only wells subject to long-term groundwater quality sampling are listed above. The remaining wells and staff gauge listed in Table 1 will continue to be utilized for groundwater and surface water elevation monitoring only.

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Figures

LEGEND:

GMA1	GMA 1–PLANT SITE 1
GMA2	GMA 2–FORMER OXBOWS J&K
GMA3	GMA 3–PLANT SITE 2
GMA4	GMA 4–PLANT SITE 3
GMA5	GMA 5–FORMER OXBOWS A&C

NOTES:

1. MAPPING IS BASED ON AERIAL PHOTOGRAPHS AND PHOTOGRAMMETRIC MAPPING BY LOCKWOOD MAPPING, INC. – FLOWN IN APRIL 1990; DATA PROVIDED BY GENERAL ELECTRIC COMPANY; AND BLASLAND & BOUCK ENGINEERS, P.C. CONSTRUCTION PLANS.
2. NOT ALL PHYSICAL FEATURES SHOWN.
3. SITE BOUNDARIES/LIMITS ARE APPROXIMATE.

0 500' 1000'
GRAPHIC SCALE

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

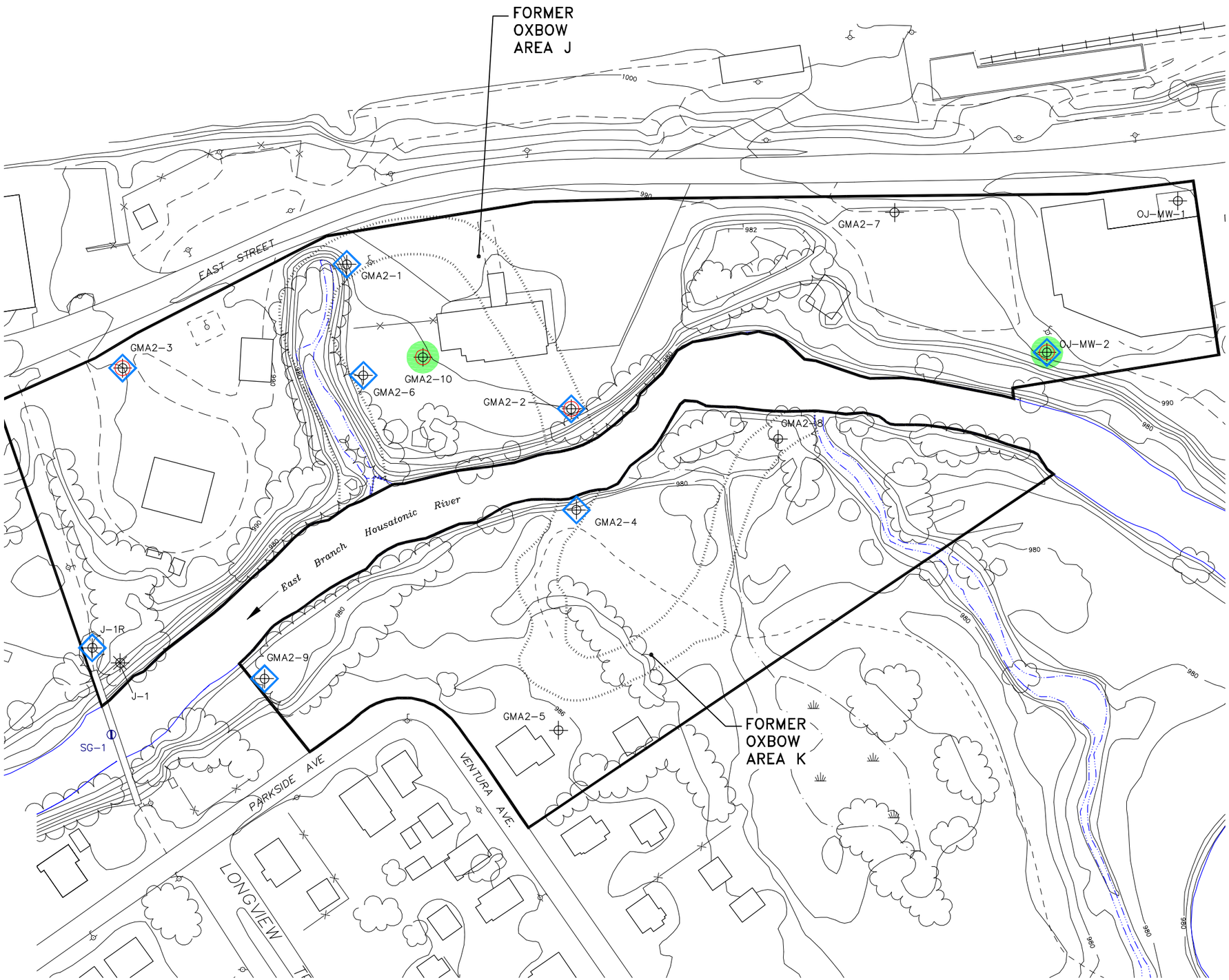
GMA 2 GROUNDWATER QUALITY MONITORING PROGRAM

GROUNDWATER MANAGEMENT AREAS

ARCADIS

FIGURE 1

CITY: SYRACUSE, NY DW/GROUP-141/ENV DB: PGL KLS AMS LD: DMW PIC: PM: D. ZUCK TM: LYR: ON=*;OFF=*REF*
R:\ENVCAD\SYRACUSE\ACTIVE\30015410000\000004\DWG\30154B11.DWG LAYOUT: 1 SAVED: 2/4/2009 3:38 PM ACADVER: 17.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 2/4/2009 3:38 PM BY: JONES, WENDY
XREFS: IMAGES: PROJECTNAME: ----
30154X00



LEGEND:

- GMA 2 BOUNDARY
- FORMER OXBOW/LOW-LYING AREA
- FENCE
- MONITORING WELL
- STAFF GUAGE
- GW-2 SENTINEL/COMPLIANCE WELL
- GW-3 PERIMETER WELL
- GW-3 COMPLIANCE POINT
- WELLS SAMPLED IN FALL 2008
- DECOMMISIONED MONITORING WELL

NOTES:

1. MAPPING IS BASED ON AERIAL PHOTOGRAPHS AND PHOTOGRAMMETRIC MAPPING BY LOCKWOOD MAPPING, INC. FLOWN IN APRIL 1990; DATA PROVIDED BY GENERAL ELECTRIC COMPANY AND BLASLAND AND BOUCK ENGINEERS, P.C. CONSTRUCTION PLANS.
2. FORMER RIVER CHANNEL AND LOWLAND AREAS DELINEATED USING THE CITY OF PITTSFIELD'S RECHANNELIZATION MAPPING, 1940.
3. NOT ALL PHYSICAL FEATURES SHOWN.
4. SITE PROPERTY BOUNDARIES ARE APPROXIMATE.
5. ALL MONITORING WELL LOCATIONS ARE APPROXIMATE.

0 50' 100'
GRAPHIC SCALE

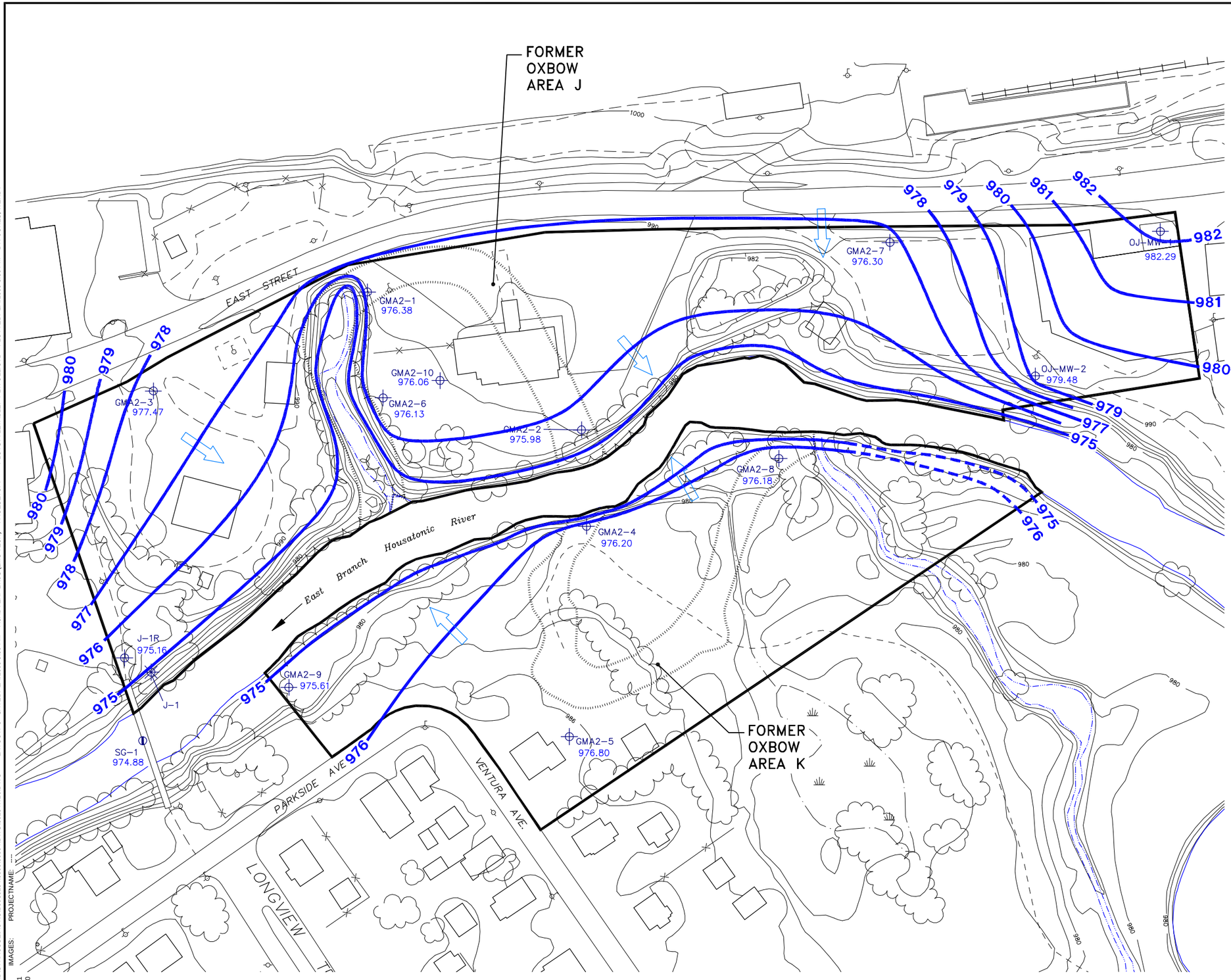
GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
GMA 2 GROUNDWATER QUALITY MONITORING PROGRAM

FALL 2008 MONITORING WELL LOCATIONS

ARCADIS

FIGURE 2

CITY: SYRACUSE, NY DIV/GROUP:141/ENV DB: PGL DMW AMS LD: DMW PIC: PM:D. ZUCK TM: LYR: ON='OFF='REF'
R:\ENVCAD\SYRACUSE\ACTIC\B0030154\00000004\DWG\30154B16.DWG LAYOUT: 2 SAVED: 1/5/2009 2:13 PM ACADVER: 17.0S (LMS TECH)
XREFS: IMAGES: PROJECTNAME: ---
30154X01
30154X00



LEGEND:

- GMA 2 BOUNDARY
- FORMER OXBOW/LOW-LYING AREA
- FENCE
- MONITORING WELL
- STAFF GAUGE
- DECOMMISIONED MONITORING WELL
- 976.13 GROUNDWATER ELEVATION (FT AMSL)
- 976 GROUNDWATER ELEVATION CONTOUR (FT AMSL), DASHED WHERE INFERRED
- GROUNDWATER FLOW

NOTES:

1. MAPPING IS BASED ON AERIAL PHOTOGRAPHS AND PHOTOGRAMMETRIC MAPPING BY LOCKWOOD MAPPING, INC. FLOWN IN APRIL 1990; DATA PROVIDED BY GENERAL ELECTRIC COMPANY AND BLASLAND AND BOUCK ENGINEERS, P.C. CONSTRUCTION PLANS.
2. FORMER RIVER CHANNEL AND LOWLAND AREAS DELINEATED USING THE CITY OF PITTSFIELD'S RECHANNELIZATION MAPPING, 1940.
3. NOT ALL PHYSICAL FEATURES SHOWN.
4. SITE PROPERTY BOUNDARIES ARE APPROXIMATE.
5. ALL MONITORING WELL LOCATIONS ARE APPROXIMATE.
6. GROUNDWATER AND RIVER LEVEL MEASUREMENTS OBTAINED OCTOBER 29, 2008.

0 50' 100'
GRAPHIC SCALE

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

GMA 2 GROUNDWATER QUALITY MONITORING PROGRAM

WATER TABLE CONTOUR MAP - FALL 2008

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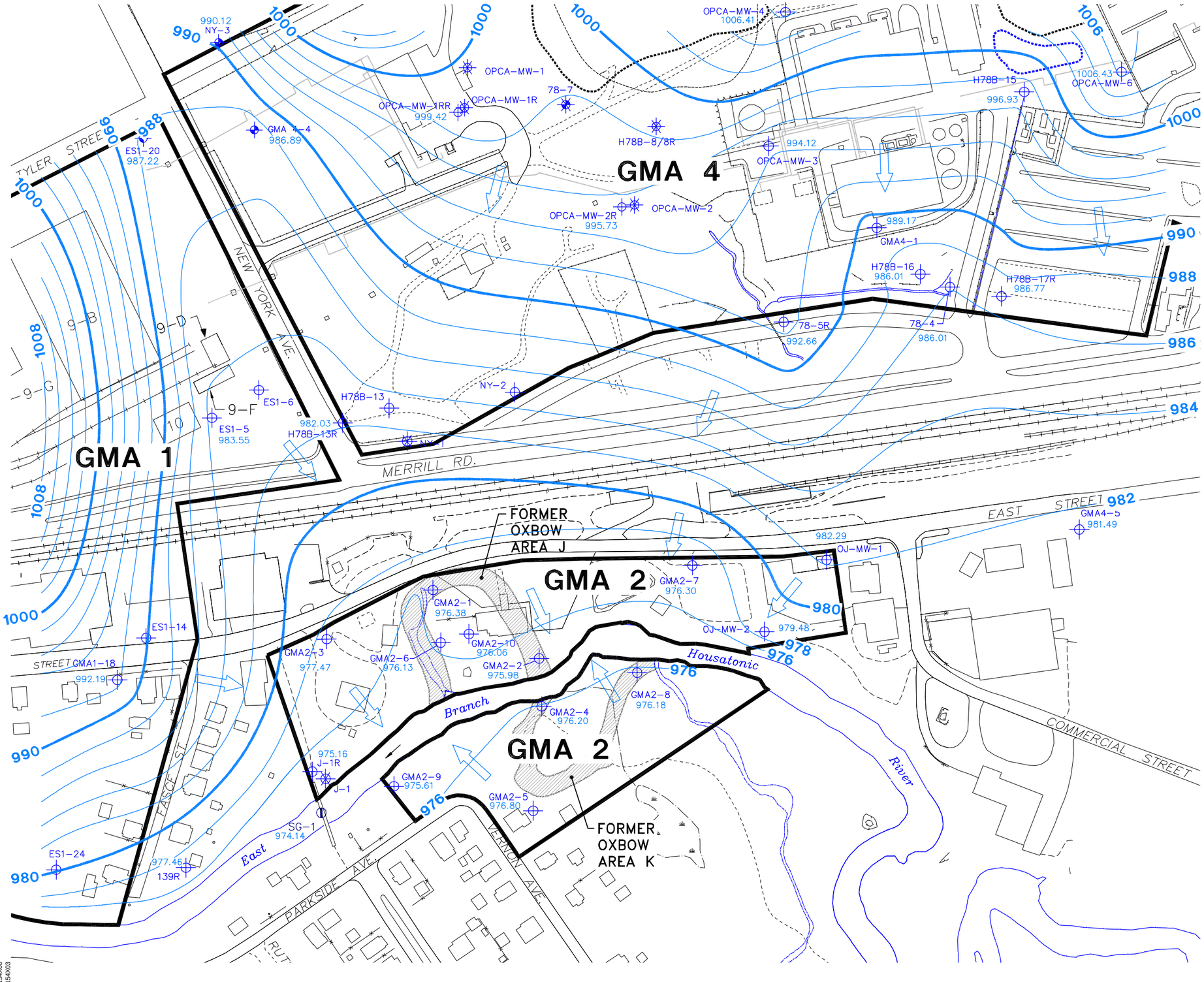
FIGURE 3

CITY: SYRACUSE DIV/GROUP: 141 DB: PGL DMW AMS LD: DMW PIC: PM: D. ZUCK TM: LYR: ON=*OFF=*REF*
R:\ENVCAD\SYRACUSE\ACTIVE\B003015400000000041\DWG\30154W20.DWG LAYOUT: 3 SAVED: 2/4/2009 3:50 PM ACADVER: 17.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 2/4/2009 3:50 PM BY: JONES, WENDY
XREFS: 30154X01 30154X00 IMAGES: PROJECTNAME: ---



LEGEND:

- GMA BOUNDARY
- FORMER OXBOW/LOW-LYING AREA
- FENCE
- MONITORING WELL
- STAFF GAUGE
- DECOMMISIONED MONITORING WELL
- 976.13 GROUNDWATER ELEVATION (FT AMSL)
- 976 GROUNDWATER ELEVATION CONTOUR (FT AMSL) (SPRING 2008)
- GROUNDWATER FLOW

NOTES:

1. MAPPING IS BASED ON AERIAL PHOTOGRAPHS AND PHOTOGRAMMETRIC MAPPING BY LOCKWOOD MAPPING, INC. FLOWN IN APRIL 1990; DATA PROVIDED BY GENERAL ELECTRIC COMPANY AND BLASLAND AND BOUCK ENGINEERS, P.C. CONSTRUCTION PLANS.
2. FORMER RIVER CHANNEL AND LOWLAND AREAS DELINEATED USING THE CITY OF PITTSFIELD'S RECHANNELIZATION MAPPING, 1940.
3. NOT ALL PHYSICAL FEATURES SHOWN.
4. SITE PROPERTY BOUNDARIES ARE APPROXIMATE.
5. ALL MONITORING WELL LOCATIONS ARE APPROXIMATE.
6. GROUNDWATER AND RIVER LEVEL MEASUREMENTS OBTAINED OCTOBER 29, 2008.

0 100' 200'
GRAPHIC SCALE

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
GMA 2 GROUNDWATER QUALITY MONITORING PROGRAM

AREA WATER TABLE CONTOUR MAP - FALL 2008

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FIGURE 4

CITY: SYRACUSE DIV/GROUP: 85 DB: PGL DMW AMS LD: DMW PIC: PM: D. ZUCK TM: LYR: ON="OFF="REF"
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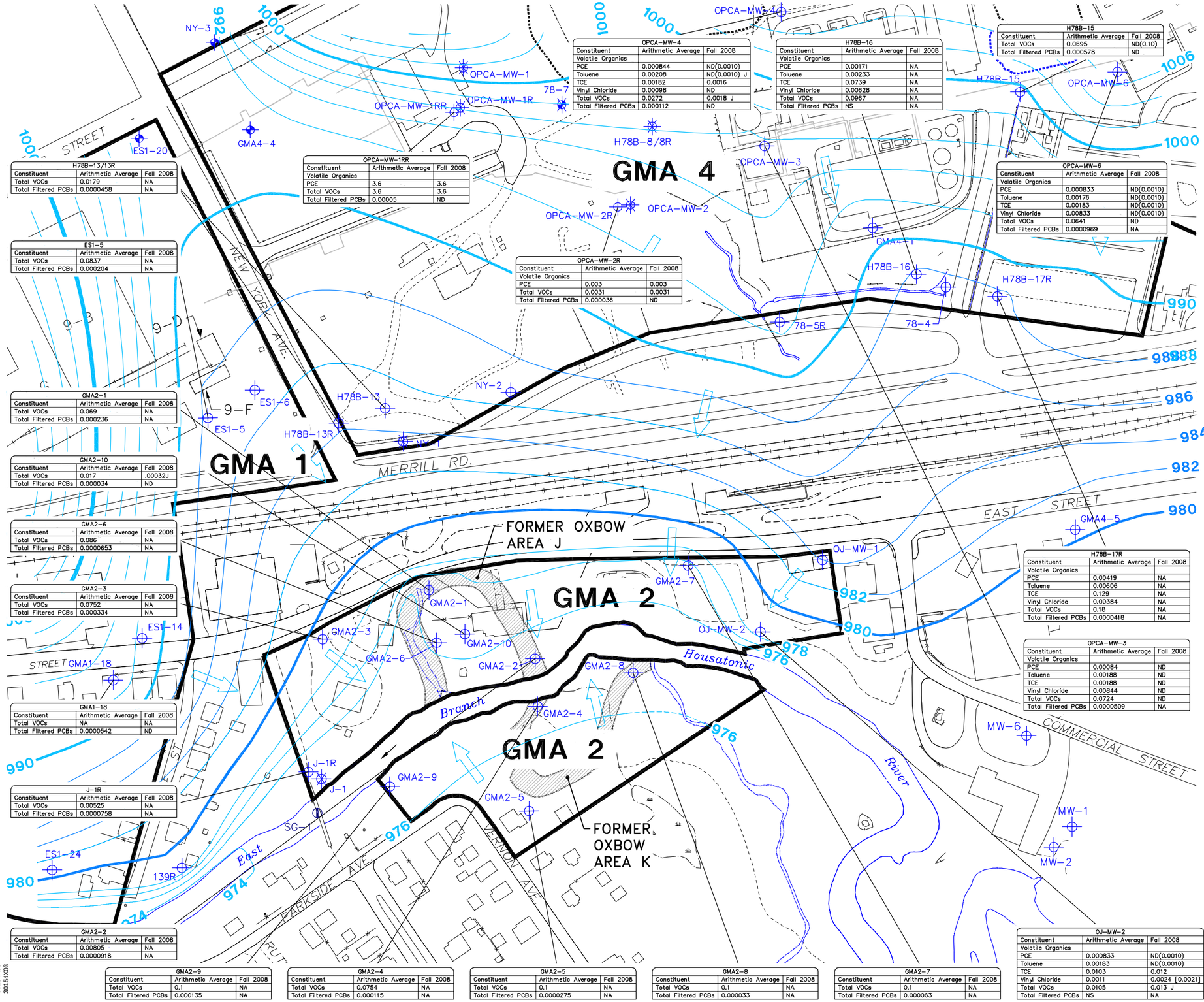
3015WX03



OPCA-MW-4		
Constituent	Arithmetic Average	Fall 2008
Volatile Organics		
PCE	0.000844	ND(0.0010)
Toluene	0.00208	ND(0.0010) J
TCE	0.00182	0.0016
Vinyl Chloride	0.00098	ND
Total VOCs	0.0272	0.0018 J
Total Filtered PCBs	0.000112	ND

H78B-16		
Constituent	Arithmetic Average	Fall 2008
Volatile Organics		
PCE	0.00171	NA
Toluene	0.00233	NA
TCE	0.0739	NA
Vinyl Chloride	0.00628	NA
Total VOCs	0.0967	NA
Total Filtered PCBs	NS	NA

H78B-15		
Constituent	Arithmetic Average	Fall 2008
Total VOCs	0.0695	ND(0.10)
Total Filtered PCBs	0.000578	ND

OPCA-MW-6		
Constituent	Arithmetic Average	Fall 2008
Volatile Organics		
PCE	0.000833	ND(0.0010)
Toluene	0.00176	ND(0.0010)
TCE	0.00183	ND(0.0010)
Vinyl Chloride	0.00833	ND(0.0010)
Total VOCs	0.0641	ND
Total Filtered PCBs	0.0000969	NA

OPCA-MW-1RR		
Constituent	Arithmetic Average	Fall 2008
Volatile Organics		
PCE	3.6	3.6
Total VOCs	3.6	3.6
Total Filtered PCBs	0.00005	ND

OPCA-MW-2R		
Constituent	Arithmetic Average	Fall 2008
Volatile Organics		
PCE	0.003	0.003
Total VOCs	0.0031	0.0031
Total Filtered PCBs	0.000036	ND

H78B-13/13R		
Constituent	Arithmetic Average	Fall 2008
Total VOCs	0.0179	NA
Total Filtered PCBs	0.0000458	NA

ES1-5		
Constituent	Arithmetic Average	Fall 2008
Total VOCs	0.0837	NA
Total Filtered PCBs	0.000204	NA

GMA2-1		
Constituent	Arithmetic Average	Fall 2008
Total VOCs	0.069	NA
Total Filtered PCBs	0.000236	NA

GMA2-10		
Constituent	Arithmetic Average	Fall 2008
Total VOCs	0.017	.00032J
Total Filtered PCBs	0.000034	ND

GMA2-6		
Constituent	Arithmetic Average	Fall 2008
Total VOCs	0.086	NA
Total Filtered PCBs	0.0000653	NA

GMA2-3		
Constituent	Arithmetic Average	Fall 2008
Total VOCs	0.0752	NA
Total Filtered PCBs	0.000334	NA

GMA1-18		
Constituent	Arithmetic Average	Fall 2008
Total VOCs	NA	NA
Total Filtered PCBs	0.0000542	ND

J-1R		
Constituent	Arithmetic Average	Fall 2008
Total VOCs	0.00525	NA
Total Filtered PCBs	0.0000758	NA

GMA2-2		
Constituent	Arithmetic Average	Fall 2008
Total VOCs	0.00805	NA
Total Filtered PCBs	0.0000918	NA

H78B-17R		
Constituent	Arithmetic Average	Fall 2008
Volatile Organics		
PCE	0.00419	NA
Toluene	0.00606	NA
TCE	0.129	NA
Vinyl Chloride	0.00384	NA
Total VOCs	0.18	NA
Total Filtered PCBs	0.0000418	NA

OPCA-MW-3		
Constituent	Arithmetic Average	Fall 2008
Volatile Organics		
PCE	0.00084	ND
Toluene	0.00188	ND
TCE	0.00188	ND
Vinyl Chloride	0.00844	ND
Total VOCs	0.0724	ND
Total Filtered PCBs	0.0000509	NA

OJ-MW-2		
Constituent	Arithmetic Average	Fall 2008
Volatile Organics		
PCE	0.000833	ND(0.0010)
Toluene	0.00183	ND(0.0010)
TCE	0.0103	0.012
Vinyl Chloride	0.0011	0.0024 [0.0021]
Total VOCs	0.0105	0.013 J
Total Filtered PCBs	NS	NA

GMA2-9		
Constituent	Arithmetic Average	Fall 2008
Total VOCs	0.1	NA
Total Filtered PCBs	0.000135	NA

GMA2-4		
Constituent	Arithmetic Average	Fall 2008
Total VOCs	0.0754	NA
Total Filtered PCBs	0.000115	NA

GMA2-5		
Constituent	Arithmetic Average	Fall 2008
Total VOCs	0.1	NA
Total Filtered PCBs	0.0000275	NA

GMA2-8		
Constituent	Arithmetic Average	Fall 2008
Total VOCs	0.1	NA
Total Filtered PCBs	0.000033	NA

GMA2-7		
Constituent	Arithmetic Average	Fall 2008
Total VOCs	0.1	NA
Total Filtered PCBs	0.000063	NA

LEGEND:

- GMA BOUNDARY
- FORMER OXBOW/LOW-LYING AREA
- FENCE
- MONITORING WELL
- STAFF GAUGE
- DECOMMISIONED MONITORING WELL
- 976 GROUNDWATER ELEVATION CONTOUR (FALL 2008) (FT AMSL)
- GROUNDWATER FLOW

NOTES:

1. MAPPING IS BASED ON AERIAL PHOTOGRAPHS AND PHOTOGRAMMETRIC MAPPING BY LOCKWOOD MAPPING, INC. FLOWN IN APRIL 1990; DATA PROVIDED BY GENERAL ELECTRIC COMPANY AND BLASLAND AND BOUCK ENGINEERS, P.C. CONSTRUCTION PLANS.
2. FORMER RIVER CHANNEL AND LOWLAND AREAS DELINEATED USING THE CITY OF PITTSFIELD'S RECHANNELIZATION MAPPING, 1940.
3. NOT ALL PHYSICAL FEATURES SHOWN.
4. SITE PROPERTY BOUNDARIES ARE APPROXIMATE.
5. ALL MONITORING WELL LOCATIONS ARE APPROXIMATE.
6. GROUNDWATER AND RIVER LEVEL MEASUREMENTS OBTAINED OCTOBER 29, 2008.
7. RESULTS SHOWN FOR WELLS SAMPLED IN FALL 2008. (DATA ONLY VALIDATED FOR GMA-1 WELLS 1/5/08)
8. ARITHMETIC AVERAGE BASED ON LAST DATE OF SAMPLING.
9. ALL RESULTS ARE IN ppm.
10. PCE - TETRACHLOROETHENE
    TCE - TRICHLOROETHENE
11. DATA QUALIFIERS:
    J: INDICATES AN ESTIMATED VALUE LESS THAN THE PRACTICAL QUANTITATION LIMIT (PQL).
    NA: NOT ANALYZED.
    NS: NOT SAMPLED.
    ND: NOT DETECTED.

0 100' 200'
GRAPHIC SCALE

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
GMA 2 GROUNDWATER QUALITY MONITORING PROGRAM

COMPARISON OF FALL 2008 RESULTS WITH AVERAGE CONCENTRATIONS - SELECTED VOCs & PCBs

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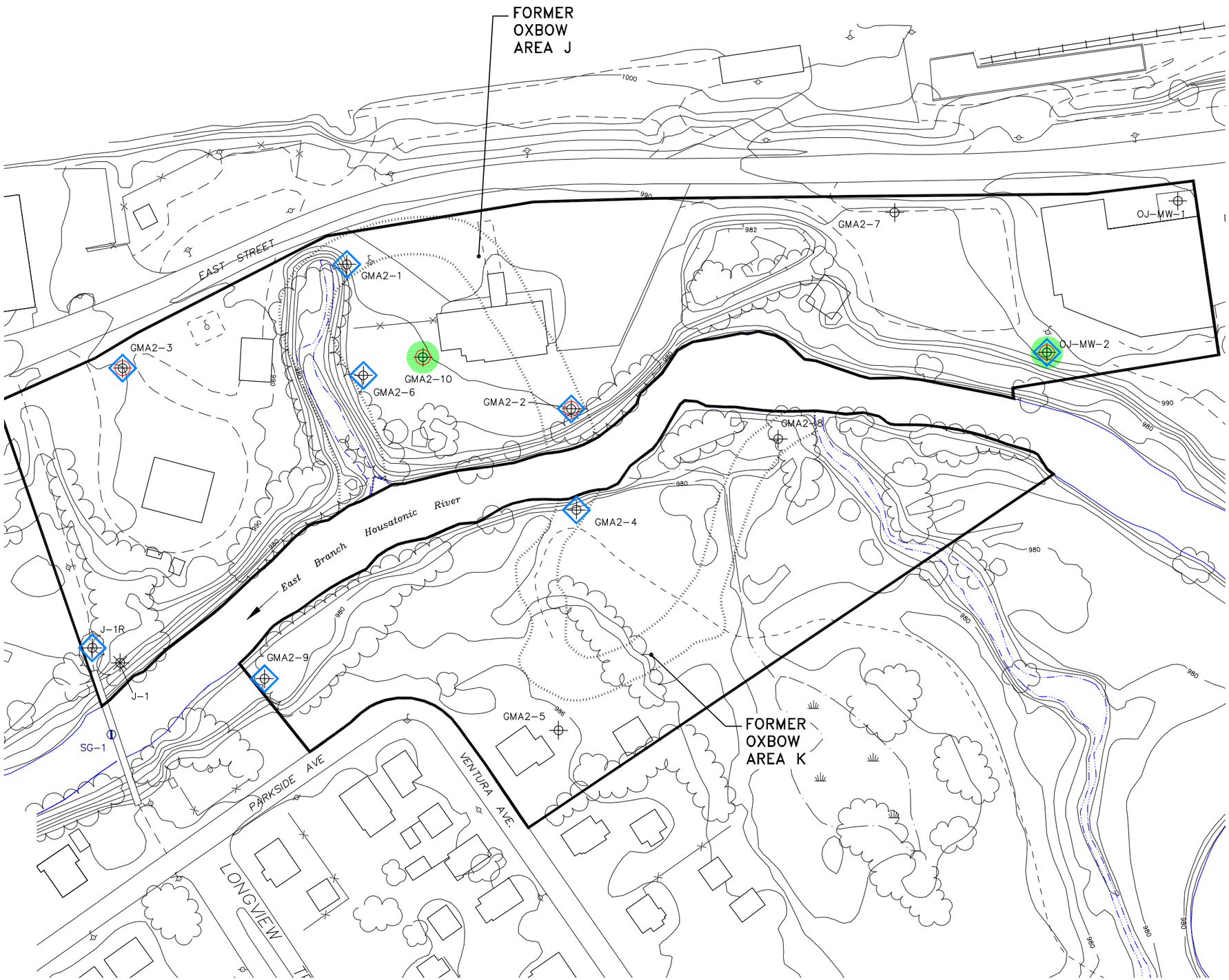
FIGURE 5

CITY: SYRACUSE, N.Y. GROUP: ENV-141 DB: PGL KFS KLS LD: DMW PM: N. SMITH TM: R. BATES LYR: ON=*;OFF=*REF; (FRZ)
R:\ENVCAD\SYRACUSE\ACTIC\B0301541000\000041DWG\301541C19.DWG LAYOUT: 5 SAVED: 2/4/2009 3:31 PM ACADVER: 17.0S (LMS TECH)
PROJECTNAME: ---
IMAGES:
XREFS: 30154X00 30154X03



LEGEND:

- GMA 2 BOUNDARY
- FORMER OXBOW/LOW-LYING AREA
- FENCE
- MONITORING WELL
- STAFF GUAGE
- GW-2 SENTINEL/COMPLIANCE WELL
- GW-3 PERIMETER WELL
- GW-3 COMPLIANCE POINT
- PROPOSED SPRING 2009 SAMPLING LOCATION
- DECOMMISIONED MONITORING WELL

NOTES:

1. MAPPING IS BASED ON AERIAL PHOTOGRAPHS AND PHOTOGRAMMETRIC MAPPING BY LOCKWOOD MAPPING, INC. FLOWN IN APRIL 1990; DATA PROVIDED BY GENERAL ELECTRIC COMPANY AND BLASLAND AND BOUCK ENGINEERS, P.C. CONSTRUCTION PLANS.
2. FORMER RIVER CHANNEL AND LOWLAND AREAS DELINEATED USING THE CITY OF PITTSFIELD'S RECHANNELIZATION MAPPING, 1940.
3. NOT ALL PHYSICAL FEATURES SHOWN.
4. SITE PROPERTY BOUNDARIES ARE APPROXIMATE.
5. ALL MONITORING WELL LOCATIONS ARE APPROXIMATE.

0 50' 100'
GRAPHIC SCALE

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
GMA 2 GROUNDWATER QUALITY MONITORING PROGRAM

PROPOSED SPRING 2009 MONITORING WELL LOCATIONS

ARCADIS

FIGURE
6

CITY: SYRACUSE, NY DIV/GROUP:141/ENV DB: PGL DMW AMS LD: DMW PIC: PM:D. ZUCKL TM: LYR: ON=*OFF=*REF*
R:\ENVCAD\SYRACUSE\ACTIC\B0030154\00000004\DWG\30154B17.DWG LAYOUT: 6 SAVED: 1/5/2009 2:32 PM ACADVER: 17.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 2/4/2009 3:36 PM BY: JONES, WENDY
XREFS: IMAGES: PROJECTNAME: ----
30154X01
30154X00

Appendices

ARCADIS

Appendix A

Field Sampling Data

Table A-1
Summary of Groundwater Sampling Methods

Groundwater Management Area 2 Long-Term Monitoring Program
Monitoring Event Evaluation Report for Fall 2008
General E`lectric Company - Pittsfield, Massachusetts

Well ID	Sampling Method											
	Spring 2002	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2005	Spring 2006	Fall 2006	Spring 2007	Fall 2007	Spring 2008	Fall 2008
GMA2-10	NS	NS	NS	NS	NS	NS	NS	NS	NS	BP	BP	BP
	Fall 2007: Well installed and added to monitoring program. Fall 2008: PCB Sample was collected on 11/13/08											
OJ-MW-2	PP/BA	PP	NS	PP	PP	NS	NS	NS	NS	PP	PP	PP
	Fall 2007: Water level too close to pump intake to measure during purging. Well dried during purging, sample collected after recharge. Spring 2003: Access to well was denied by property owner. Fall 2002: Well went dry during sampling. Several visits required to collect full sample volume. Spring 2002: VOCs collected with a disposable teflon bailer.											

Notes:

1. Sampling method abbreviations:
   BP - Bladder Pump.
   PP - Peristaltic Pump.
   PP/BA - Peristaltic Pump with Bailer used for VOC sample collection.
   NS - Not Sampled.
2. Baseline monitoring program conducted from spring 2002 to fall 2003.
3. Interim/baseline sampling conducted at select wells from spring 2004 to spring 2007.
4. Long-term monitoring program initiated in fall 2007.

GROUNDWATER SAMPLING LOG

Well No. OS-MW-2
Key No. —
PID Background (ppm) 0
Well Headspace (ppm) 0

Site/GMA Name GMA2, GE Pittsfield
Sampling Personnel KIC, DAZ
Date 10/20/08
Weather 40's sunny

WELL INFORMATION

Reference Point Marked? (Y) N
Height of Reference Point —
Meas. From —
Well Diameter .75 (ID)
Screen Interval Depth 19-29'
Meas. From —
Water Table Depth 14.52
Meas. From TIC
Well Depth 16.83
Meas. From TIC
Length of Water Column 2.31
Volume of Water in Well .05 gallon
Intake Depth of Pump/Tubing 15.5
Meas. From TIC

Reference Point Identification:
TIC: Top of Inner (PVC) Casing
TOC: Top of Outer (Protective) Casing
Grade/BGS: Ground Surface

Redevelop? (Y) N

Sample Time 1145
Sample ID OS-MW-2
Duplicate ID ~~DUP#1 (GMA2 DUP02~~
MS/MSD N/A DUP 102008
Split Sample ID N/A

Analytical Parameters:	Required	Collected
VOCs (Std. list)	(X)	(X)
VOCs (Exp. list)	( )	( )
SVOCs	( )	( )
PCBs (Total)	( )	( )
PCBs (Dissolved)	( )	( )
Metals/Inorganics (Total)	( )	( )
Metals/Inorganics (Dissolved)	( )	( )
EPA Cyanide (Dissolved)	( )	( )
PAC Cyanide (Dissolved)	( )	( )
PCDDs/PCDFs	( )	( )
Pesticides/Herbicides	( )	( )
Natural Attenuation	( )	( )
Other (Specify)	( )	( )

EVACUATION INFORMATION

Pump Start Time 1030
Pump Stop Time 1155
Minutes of Pumping 85
Volume of Water Removed ≈2 gal
Did Well Go Dry? Y (N)

Evacuation Method: Bailer ( ) Bladder Pump ( )
Peristaltic Pump (X) Submersible Pump ( ) Other/Specify ( )
Pump Type: (re)pump
Samples collected by same method as evacuation? (Y) N (specify)

Water Quality Meter Type(s) / Serial Numbers: YSI 556 MPS #3 / HACH 2100P turb.

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (ft TIC)	Temp. (Celsius) [3%]*	pH [0.1 units]*	Sp. Cond. (mS/cm) [3%]*	Turbidity (NTU) [10% or 1 NTU]*	DO (mg/l) [10% or 0.1 mg/l]*	ORP (mV) [10 mV]*
1035	200	0.26	~~15~~.88	—	—	—	22	—	—
1040	160	0.47	16.19	15.12	6.70	1.003	20	3.25	-14.9
1045	120	0.63	16.17	14.88	6.65	1.017	34	2.82	-55.9
** 1050									
1100 ~~1055~~	120	0.79	15.35	15.27	6.73	1.027	5	1.52	-26.6
1105	120	0.95	15.70	15.33	6.68	1.021	4	1.21	-28.7
1110	100	1.08	16.28	15.51	6.67	1.024	4	1.05	-29.0
1115	100	1.21	16.22	15.46	6.69	1.031	4	2.35	-45.2

(K)

* The stabilization criteria for each field parameter (three consecutive readings collected at 3- to 5-minute intervals) is listed in each column heading.

OBSERVATIONS/SAMPLING METHOD DEVIATIONS
(1055) reconnected flowthrough cell
*NO 5-gal. 45" well
* 3' of sediment in well
**1050: tubing became clogged, pump stopped pumping water even though water level was above ~~top~~ base of tubing, observed issue.

SAMPLE DESTINATION
Laboratory: SGS
Delivered Via: UPS
Airbill #: —

Field Sampling Coordinator:

C:\WORKGE\Groundwater\554198\Attachment\D-2

GROUNDWATER SAMPLING LOG

Well No. OJ-MW-2

Site/GMA Name GMA2 - GE Pittsfield
Sampling Personnel B. Zuck / K. Connell
Date 10/20/09
Weather Clear 48°F

WELL INFORMATION - See Page 1

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (ft TIC)	Temp. (Celsius) [3%]*	pH [0.1 units]*	Sp. Cond. (mS/cm) [3%]*	Turbidity (NTU) [10% or 1 NTU]*	DO (mg/l) [10% or 0.1 mg/l]*	ORP (mV) [10 mV]*
1120	100	1.34	15.93	15.24	6.66	1.029	4	1.95	-43.2
1125	↓	1.47	15.84	15.29	6.68	1.029	4	1.78	-43.4
1130		1.61	15.74	15.22	6.67	1.029	3	1.66	-43.7
1135		1.74	15.82	15.38	6.66	1.027	1	1.65	-42.9
1138		1.82	15.81	15.34	6.64	1.027	1	1.58	-42.2
1141	↓	1.90	15.76	15.34	6.69	1.028	1	1.56	-41.4
→ Sampled @				1145	←				

* The stabilization criteria for each field parameter (three consecutive readings collected at 3- to 5-minute intervals) is listed in each column heading.

OBSERVATIONS/SAMPLING METHOD DEVIATIONS

GROUNDWATER SAMPLING LOG

Well No. GMA2-10
Key No. —
PID Background (ppm) 0
Well Headspace (ppm) 0

Site/GMA Name GMA2
Sampling Personnel Eng/DA
Date 10/26/08
Weather Sunny - High 40°

WELL INFORMATION

Reference Point Marked? Y (N)
Height of Reference Point ____ Meas. From Ground
Well Diameter 2"
Screen Interval Depth 9-19' Meas. From TIC
Water Table Depth 16.62 Meas. From TIC
Well Depth 19 Meas. From TIC
Length of Water Column 2.38
Volume of Water in Well 0.4
Intake Depth of Pump/Tubing 17.57 Meas. From TIC

Reference Point Identification:
TIC: Top of Inner (PVC) Casing
TOC: Top of Outer (Protective) Casing
Grade/BGS: Ground Surface

Redevelop? Y (N)

Sample Time 12:20
Sample ID GMA2-10
Duplicate ID N/A
MS/MSD GMA2-10MS / GMA2-10MSD
Split Sample ID —

Required	Analytical Parameters:	Collected
(X)	VOCs (Std. list)	(X)
( )	VOCs (Exp. list)	( )
( )	SVOCs	( )
( )	PCBs (Total)	( )
( )	PCBs (Dissolved)	( )
( )	Metals/Inorganics (Total)	( )
( )	Metals/Inorganics (Dissolved)	( )
( )	EPA Cyanide (Dissolved)	( )
( )	PAC Cyanide (Dissolved)	( )
( )	PCDDs/PCDFs	( )
( )	Pesticides/Herbicides	( )
( )	Natural Attenuation	( )
( )	Other (Specify)	( )

EVACUATION INFORMATION

Pump Start Time 10:50
Pump Stop Time 12:20
Minutes of Pumping 90
Volume of Water Removed ~~1500~~ 1,680 gallons
Did Well Go Dry? Y (N)

Evacuation Method: Bailer ( ) Bladder Pump (X)
Peristaltic Pump ( ) Submersible Pump ( ) Other/Specify ( )
Pump Type: Masschalk - System One
Samples collected by same method as evacuation? (Y) N (specify)

Water Quality Meter Type(s) / Serial Numbers: YSI 556 MPS # 03C0392 AE
HACH 2100P 46500-60

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (ft TIC)	Temp. (Celsius) [3%]*	pH [0.1 units]*	Sp. Cond. (mS/cm) [3%]*	Turbidity (NTU) [10% or 1 NTU]*	DO (mg/l) [10% or 0.1 mg/l]*	ORP (mV) [10 mV]*
10:50	75	Initial	16.62	—	—	—	12	—	—
10:55	"	375	"	12.33	6.63	1.389	11	16.44	-176.3
11:00	"	750	"	12.24	6.62	1.390	10	8.91	-173.6
11:05	"	1125	"	12.12	6.63	1.393	8	8.17	-175.7
11:10	"	~~1500~~ 1500	"	12.02	7.00	1.397	6	6.97	-183.1
11:15	"	~~1875~~ 1250	"	12.02	6.59	1.398	6	6.48	-180.6
11:20	"	~~2250~~ 1500	"	12.02	6.63	1.403	5	6.63	-180.2
11:25	"	~~2625~~ 1750	"	12.07	6.64	1.406	4	5.20	-180.5

* The stabilization criteria for each field parameter (three consecutive readings collected at 3- to 5-minute intervals) is listed in each column heading.

OBSERVATIONS/SAMPLING METHOD DEVIATIONS Initial purge - clear, no odor

SAMPLE DESTINATION

Laboratory: STL
Delivered Via: UPS
Airbill #: —

Field Sampling Coordinator: [signature]

GROUNDWATER SAMPLING LOG

Well No. GMA2-10

Site/GMA Name GMA 2
Sampling Personnel Emc/JA
Date 10/20/08
Weather Sunny - mid 50s

WELL INFORMATION - See Page 1

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (ft TIC)	Temp. (Celsius) [3%]*	pH [0.1 units]*	Sp. Cond. (mS/cm) [3%]*	Turbidity (NTU) [10% or 1 NTU]*	DO (mg/l) [10% or 0.1 mg/l]*	ORP (mV) [10 mV]*
1130	75	3000	16.02	12.15	6.65	1.410	4	4.90	-179.2
1135	"	3375	"	12.31	6.66	1.416	3	3.17	-180.6
1140	"	3750	"	12.39	6.67	1.419	3	2.17	-181.5
1145	"	4125	"	12.43	6.71	1.423	3	1.21	-180.4
1150	"	4500	"	12.45	6.69	1.424	3	1.09	-180.7
1155	"	4875	"	12.45	6.70	1.425	3	1.07	-180.6
1200	"	5250	"	12.46	6.69	1.425	3	0.97	-179.3
1205	"	5625	"	12.53	6.71	1.426	3	0.94	-180.7
1210	"	6000	"	12.60	6.74	1.427	3	1.01	-181.7
1215	"	6375	SAMPLE						

* The stabilization criteria for each field parameter (three consecutive readings collected at 3- to 5-minute intervals) is listed in each column heading.

OBSERVATIONS/SAMPLING METHOD DEVIATIONS Final purge - clear, no odor

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Appendix B

Validated Groundwater
Analytical Results – Fall 2008

Table B-1
Fall 2008 Groundwater Analytical Results

Groundwater Managment Area 2 Long-Term Monitoring Program
Monitoring Event Evaluation Report for Fall 2008
General Electric Company - Pittsfield, Massachusetts
(Results are presented in parts per million, ppm)

Parameter / Sample ID: / Date Collected:	GMA2-10 10/20-11/13/08	OJ-MW-2 10/20/08
Volatile Organics		
1,1,1,2-Tetrachloroethane	ND(0.0010)	ND(0.0010) [ND(0.0010)]
1,1,1-Trichloroethane	ND(0.0010)	ND(0.0010) [ND(0.0010)]
1,1,2,2-Tetrachloroethane	ND(0.0010)	ND(0.0010) [ND(0.0010)]
1,1,2-Trichloroethane	ND(0.0010)	ND(0.0010) [ND(0.0010)]
1,1-Dichloroethane	ND(0.0010)	ND(0.0010) [ND(0.0010)]
1,1-Dichloroethene	ND(0.0010)	ND(0.0010) [ND(0.0010)]
1,2,3-Trichloropropane	ND(0.0010)	ND(0.0010) [ND(0.0010)]
1,2-Dibromo-3-chloropropane	ND(0.0050) J	ND(0.0050) J [ND(0.0050) J]
1,2-Dibromoethane	ND(0.0010)	ND(0.0010) [ND(0.0010)]
1,2-Dichloroethane	ND(0.0010)	ND(0.0010) [ND(0.0010)]
1,2-Dichloropropane	ND(0.0010)	ND(0.0010) [ND(0.0010)]
1,4-Dioxane	ND(0.10) J	ND(0.10) J [ND(0.10) J]
2-Butanone	ND(0.0050) J	ND(0.0050) J [ND(0.0050) J]
2-Chloro-1,3-butadiene	ND(0.0010)	ND(0.0010) [ND(0.0010)]
2-Chloroethylvinylether	R	ND(0.013) J [ND(0.013) J]
2-Hexanone	ND(0.0050)	ND(0.0050) [ND(0.0050) J]
3-Chloropropene	ND(0.0010)	ND(0.0010) [ND(0.0010)]
4-Methyl-2-pentanone	ND(0.0050)	ND(0.0050) [ND(0.0050)]
Acetone	R	ND(0.0050) J [ND(0.0050) J]
Acetonitrile	ND(0.020) J	ND(0.020) J [ND(0.020) J]
Acrolein	R	ND(0.025) J [ND(0.025) J]
Acrylonitrile	ND(0.025) J	ND(0.025) J [ND(0.025) J]
Benzene	ND(0.0010)	ND(0.0010) [ND(0.0010)]
Bromodichloromethane	ND(0.0010)	ND(0.0010) [ND(0.0010)]
Bromoform	ND(0.0010)	ND(0.0010) [ND(0.0010)]
Bromomethane	ND(0.0010) J	ND(0.0010) J [ND(0.0010)]
Carbon Disulfide	ND(0.0010)	ND(0.0010) [ND(0.0010)]
Carbon Tetrachloride	ND(0.0010)	ND(0.0010) [ND(0.0010)]
Chlorobenzene	ND(0.0010)	ND(0.0010) [ND(0.0010)]
Chloroethane	ND(0.0010)	ND(0.0010) [ND(0.0010)]
Chloroform	ND(0.0010)	ND(0.0010) [ND(0.0010)]
Chloromethane	ND(0.0010)	ND(0.0010) [ND(0.0010)]
cis-1,3-Dichloropropene	ND(0.0010)	ND(0.0010) [ND(0.0010)]
Dibromochloromethane	ND(0.0010)	ND(0.0010) [ND(0.0010)]
Dibromomethane	ND(0.0010)	ND(0.0010) [ND(0.0010)]
Dichlorodifluoromethane	ND(0.0010)	ND(0.0010) [ND(0.0010)]
Ethyl Methacrylate	ND(0.0010)	ND(0.0010) [ND(0.0010)]
Ethylbenzene	ND(0.0010)	ND(0.0010) [ND(0.0010)]
Iodomethane	ND(0.0010)	ND(0.0010) [ND(0.0010)]
Isobutanol	ND(0.050) J	ND(0.050) J [ND(0.050) J]
Methacrylonitrile	ND(0.010) J	ND(0.010) J [ND(0.010)]
Methyl Methacrylate	ND(0.0010)	ND(0.0010) [ND(0.0010)]
Methylene Chloride	ND(0.0050)	ND(0.0050) [ND(0.0050)]
Propionitrile	ND(0.020) J	ND(0.020) J [ND(0.020) J]
Styrene	ND(0.0010)	ND(0.0010) [ND(0.0010)]
Tetrachloroethene	ND(0.0010)	ND(0.0010) [ND(0.0010)]
Toluene	ND(0.0010)	ND(0.0010) [ND(0.0010)]
trans-1,2-Dichloroethene	ND(0.0010)	ND(0.0010) [ND(0.0010)]
trans-1,3-Dichloropropene	ND(0.0010)	ND(0.0010) [ND(0.0010)]
trans-1,4-Dichloro-2-butene	ND(0.0050) J	ND(0.0050) J [ND(0.0050) J]
Trichloroethene	ND(0.0010)	0.012 [0.012]
Trichlorofluoromethane	ND(0.0010) J	ND(0.0010) J [ND(0.0010)]
Vinyl Acetate	ND(0.0025)	ND(0.0025) [ND(0.0025)]
Vinyl Chloride	0.00032 J	0.0024 J [0.0021]
Xylenes (total)	ND(0.0010)	ND(0.0010) [ND(0.0010)]
Total VOCs	0.00032 J	0.014 J [0.014]

Table B-1
Fall 2008 Groundwater Analytical Results

Groundwater Managment Area 2 Long-Term Monitoring Program
Monitoring Event Evaluation Report for Fall 2008
General Electric Company - Pittsfield, Massachusetts
(Results are presented in parts per million, ppm)

Parameter / Sample ID: / Date Collected:	GMA2-10 10/20-11/13/08	OJ-MW-2 10/20/08
PCBs-Filtered		
Aroclor-1016	ND(0.000068) [ND(0.000066)]	NA
Aroclor-1221	ND(0.000068) [ND(0.000066)]	NA
Aroclor-1232	ND(0.000068) [ND(0.000066)]	NA
Aroclor-1242	ND(0.000068) [ND(0.000066)]	NA
Aroclor-1248	ND(0.000068) [ND(0.000066)]	NA
Aroclor-1254	ND(0.000068) [ND(0.000066)]	NA
Aroclor-1260	ND(0.000068) [ND(0.000066)]	NA
Total PCBs	ND(0.000068) [ND(0.000066)]	NA

Notes:

1. Samples were collected by ARCADIS, and submitted to SGS Environmental Services, Inc. for analysis of volatiles an PCBs (filtered).
2. Samples have been validated as per Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP), General Elec Company, Pittsfield, Massachusetts, ARCADIS (approved March 15, 2007 and re-submitted March 30, 2007).
3. NA - Not Analyzed.
4. ND - Analyte was not detected. The number in parenthesis is the associated detection limit.
5. Field duplicate sample results are presented in brackets.

Data Qualifiers:

Organics (volatiles, PCBs)

J - Indicates that the associated numerical value is an estimated concentration.
R - Data was rejected due to a deficiency in the data generation process.

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Appendix C

Data Validation Report –
Fall 2008

Appendix C
Groundwater Sampling Data Validation Report
Groundwater Management Area 2 – Fall 2008

General Electric Company
Pittsfield, Massachusetts

1.0 General

This attachment summarizes the data validation review performed on behalf of the General Electric Company (GE) for groundwater samples collected in October and November 2008 as part of groundwater sampling activities conducted at Groundwater Management Area 2, located at the General Electric Company/Housatonic River Site in Pittsfield, Massachusetts. The samples were analyzed for polychlorinated biphenyls (PCBs) and/or various other constituents listed in Appendix IX of 40 CFR Part 264, plus one additional constituent -- 2-chloroethyl vinyl ether (hereafter referred to as Appendix IX) by SGS Environmental Services, Inc. of Wilmington, North Carolina. Data validation was performed for two PCB samples and five volatile organic compound (VOC) samples.

2.0 Data Evaluation Procedures

This attachment outlines the applicable quality control criteria utilized during the data review process and any deviations from those criteria. The data review was conducted in accordance with the following documents:

- *Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP), General Electric Company, Pittsfield, Massachusetts,* ARCADIS BBL (submitted by GE on March 30, 2007 and approved by EPA on June 13, 2007)*;* and

- *Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses*, USEPA Region I (Draft, December 1996).

The data were validated to either a Tier I or Tier II level, as described below. Any deviations from the applicable quality control criteria utilized during the data review process are identified below. A tabulated summary of the Tier I/Tier II data review is presented in Table C-1. Each sample subject to evaluation is listed in Table B-1 to document that data review was performed. Samples that required data qualification are listed separately.

The following data qualifiers were used in this data evaluation:

J The compound was positively identified, but the associated numerical value is an estimated concentration. This qualifier is used when the data evaluation procedure identifies a deficiency in the data generation process. This qualifier is also used when a compound is detected at an estimated concentration less than the corresponding practical quantitation limit (PQL).

U The compound was analyzed for, but was not detected. The sample quantitation limit is presented. Non-detect sample results are presented as ND(PQL) within this report for consistency with documents previously prepared for investigations conducted at the GE-Pittsfield/Housatonic River Site.

UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is estimated and may or may not represent the actual level of quantitation. Non-detect sample results that required qualification are presented as ND(PQL) J within this report for consistency with documents previously prepared for investigations conducted at the GE-Pittsfield/Housatonic River Site.

R Indicates that the previously reported detection limit or sample result has been rejected due to a major deficiency in the data generation procedure. The data should not be used for any qualitative or quantitative purpose.

3.0 Data Validation Procedures

Section 7.5 of the FSP/QAPP states that analytical data will be validated to a Tier I level following the procedures presented in the *Region I Tiered Organic and Inorganic Data Validation Guidelines* (EPA guidelines). The Tier I review consisted of a completeness evidence audit, as outlined in the *EPA Region I CSF Completeness Evidence Audit Program* (EPA Region I, July 31, 1991), to ensure that laboratory data and documentation were present. In the event data packages were determined to be incomplete, the missing information was requested from the laboratory. Upon completion of the Tier I review, the data packages complied with the EPA Region I Tier I data completeness requirements.

The Tier II data review consisted of a review of data package summary forms for identification of quality assurance/quality control (QA/QC) deviations and qualification of the data according to the Region I Data Validation Functional Guidelines. Additionally, field duplicates were examined for relative percent difference (RPD) compliance with the criteria specified in the FSP/QAPP.

A tabulated summary of the samples subject to Tier I and Tier II data review is presented in the following table.

Summary of Samples Subjected to Tier I and Tier II Data Validation

Parameter	Tier I Only			Tier I &Tier II			Total
	Samples	Duplicates	Blanks	Samples	Duplicates	Blanks	
PCBs	0	0	0	1	1	0	2
VOCs	0	0	0	2	1	2	5
Total	**0**	**0**	**0**	**3**	**2**	**2**	**7**

When qualification of the sample data was required, the sample results associated with a QA/QC parameter deviation were qualified in accordance with the procedures outlined in EPA Region I data validation guidance documents. When the data validation process identified several quality control deficiencies, the cumulative effect of the various deficiencies was employed in assigning the final data qualifier. A summary of the QA/QC parameter deviations that resulted in data qualification is presented in Section 4 below.

4.0 Summary of QA/QC Parameter Deviations Requiring Data Qualification

This section provides a summary of the deviations from the applicable QA/QC criteria that resulted in qualification of results.

The initial calibration criterion for organic analyses requires that the average relative response factor (RRF) has a value greater than 0.05. Sample results were qualified as estimated (J) when this criterion was not achieved. The compounds that did not achieve the initial calibration criterion and the number of samples qualified are presented in the following table.

Compounds Qualified Due to Initial Calibration Deviations (RRF)

Analysis	Compound	Number of Affected Samples	Qualification
VOCs	1,2-Dibromo-3-chloropropane	5	J
	1,4-Dioxane	5	J
	2-Butanone	5	J
	2-Chloroethylvinylether	4	J
	Acetone	4	J
	Acetonitrile	5	J
	Acrolein	4	J
	Acrylonitrile	5	J
	Isobutanol	5	J
	Methacrylonitrile	4	J
	Propionitrile	5	J
	trans-1,4-Dichloro-2-butene	5	J

The continuing calibration criterion requires that the percent difference (%D) between the initial calibration RRF and the continuing calibration RRF for VOCs and SVOCs be less than 25%. Sample data for detect and non-detect compounds with %D values that exceeded the continuing calibration criteria were qualified as estimated (J). A summary of the compounds that exceeded the continuing calibration criterion and the number of samples qualified due to those deviations are presented in the following table.

Compounds Qualified Due to Continuing Calibration of %D Values

Analysis	Compound	Number of Affected Samples	Qualification
VOCs	2-Hexanone	1	J
	Acetonitrile	1	J
	Acrolein	1	J
	Bromomethane	4	J
	Isobutanol	1	J
	Methacrylonitrile	1	J

Matrix spike/matrix spike duplicate (MS/MSD) sample analysis recovery criteria for organics require that the MS/MSD recovery must be within the laboratory-generated QC control limits specified on the MS reporting form. Non-detect organic sample results that exhibited MS/MSD recoveries less than 10% were qualified as rejected (R). The compounds that did not meet MS/MSD recovery criteria and the number of samples qualified due to those deviations are presented in the following table.

Compounds Qualified Due to MS/MSD Recovery Deviations

Analysis	Compound	Number of Affected Samples	Qualification
VOCs	2-Chloroethylvinylether	1	R
	Acetone	1	R
	Acrolein	1	R

Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analysis recovery criteria for organics must be within the laboratory-generated QC acceptance limits specified on the LCS/LCSD reporting form. Organic sample results associated with the LCS/LCSD that exceeded laboratory-generated QC acceptance limits were qualified as estimated (J). The compounds that did not meet LCS/LCSD recovery criteria and the number of samples qualified due to those deviations are presented in the following table.

Compounds Qualified Due to LCS/LCSD Recovery Deviations

Analysis	Compound	Number of Affected Samples	Qualification
VOCs	Trichlorofluoromethane	3	J
	Vinyl Chloride	3	J

5.0 Overall Data Usability

This section summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. The percent usability calculation included analyses evaluated under both the Tier I/II data validation reviews. The percent usability calculation also includes quality control samples (i.e., field/equipment blanks, trip blanks, and field duplicates) to aid in the evaluation of data usability. Data usability is summarized in the following table.

Data Usability

Parameter	Percent Usability	Rejected Data
VOCs	98.9	A total of three sample results were rejected due to MS/MSD recovery deviations.
PCBs	100	None

The data package completeness, as determined from the Tier I data review, was used in combination with the data quality deviations identified during the Tier II data review to determine overall data quality. As specified in the FSP/QAPP, the overall precision, accuracy, representativeness, comparability, and completeness (PARCC) parameters determined from the Tier I and Tier II data reviews were used as indicators of overall data quality. These parameters were assessed through an evaluation of the results of the field and laboratory QA/QC sample analyses to provide a measure of compliance of the analytical data with the Data Quality Objectives (DQOs) specified in the FSP/QAPP. Therefore, the following sections present summaries of the PARCC parameters assessment with regard to the DQOs specified in the FSP/QAPP.

5.1 Precision

Precision measures the reproducibility of measurements under a given set of conditions. Specifically, it is a quantitative measure of the variability of a group of measurements compared to their average value. For this investigation, precision was defined as the RPD between duplicate sample results. The duplicate samples used to evaluate precision included field duplicates, MS/MSD samples, and LCS/LCSD samples. None of the data required qualification due to field duplicate RPD deviations, MS/MSD RPD deviations, or LCS/LCSD RPD deviations.

5.2 Accuracy

Accuracy measures the bias in an analytical system or the degree of agreement of a measurement with a known reference value. For this investigation, accuracy was defined as the percent recovery of QA/QC samples that were spiked with a known concentration of an analyte or compound of interest. The QA/QC samples used to evaluate analytical accuracy included instrument calibration, internal standards, LCS/LCSDs, MS/MSD samples, and surrogate compound recoveries. For this analytical program, 22.0% of the data required qualification due to instrument calibration deviations, 2.0% of the data required qualification due to LCS/LCSD recoveries, and 1.0% of the data required qualification due to MS/MSD recovery deviations. None of the data required qualification due to internal standard recovery deviations or surrogate compound recovery deviations.

5.3 Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is a qualitative parameter, which is most concerned with the proper design of the sampling program. The representativeness criterion is best satisfied by making certain that sampling locations are selected properly and a sufficient number of samples are collected. This parameter has been addressed by collecting samples at locations specified in the EPA-approved work plans, and by following the procedures for sample collection/analyses that were described in the FSP/QAPP. Additionally, the analytical program used procedures consistent with EPA-approved analytical methodology. A QA/QC parameter that is an indicator of the representativeness of a sample is holding time. Holding time criteria are established to maintain the samples in a state that is representative of the in-situ field conditions before analysis. For this analytical data set, none of the data required qualification due to holding time deviations.

5.4 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. This goal was achieved through the use of the standardized techniques for sample collection and analysis presented in the FSP/QAPP. Specifically, all the groundwater samples collected in October and November 2008 were analyzed by EPA SW-846 method 8082 for PCBs and 8260.

5.5 Completeness

Completeness is defined as the percentage of measurements that are judged to be valid or usable to meet the prescribed DQOs. The completeness criterion is essentially the same for all data uses -- the generation of a sufficient amount of valid data. The actual completeness of this analytical data set ranged from 98.9% to 100% for individual analytical parameters and had an overall usability of 99.5%, which is greater than the minimum required usability of 90% as specified in the FSP/QAPP.

Table C-1
Analytical Data Validation Summary
Groundwater Management Area 2 Sampling - Fall 2008

General Electric Company - Pittsfield, Massachusetts
(Results are presented in parts per million, ppm)

Sample Delivery Group No.	Sample ID	Date Collected	Matrix	Validation Level	Qualification	Compound	QA/QC Parameter	Value	Control Limits	Qualified Result	Notes
PCBs											
G582-210	GMA2-10 (Filtered)	11/13/2008	Water	Tier II	No						
G582-210	GMA2-DUP-2 (Filtered)	11/13/2008	Water	Tier II	No						Parent Sample GMA2-10 (Filtered)
VOCs											
G582-146	DUP-102008	10/20/2008	Water	Tier II	Yes	1,2-Dibromo-3-chloropropane	ICAL RRF	0.016	>0.05	ND(0.0050) J	Parent Sample OJ-MW-2
						1,4-Dioxane	ICAL RRF	0.001	>0.05	ND(0.10) J	
						2-Butanone	ICAL RRF	0.038	>0.05	ND(0.0050) J	
						2-Chloroethylvinylether	ICAL RRF	0.013	>0.05	ND(0.013) J	
						2-Hexanone	CCAL %D	39.3%	<25%	ND(0.0050) J	
						Acetone	ICAL RRF	0.028	>0.05	ND(0.0050) J	
						Acetonitrile	ICAL RRF	0.008	>0.05	ND(0.020) J	
						Acetonitrile	CCAL %D	25.0%	<25%	ND(0.020) J	
						Acrolein	ICAL RRF	0.014	>0.05	ND(0.025) J	
						Acrylonitrile	ICAL RRF	0.027	>0.05	ND(0.025) J	
						Isobutanol	ICAL RRF	0.004	>0.05	ND(0.050) J	
						Isobutanol	CCAL %D	25.0%	<25%	ND(0.050) J	
						Propionitrile	ICAL RRF	0.010	>0.05	ND(0.020) J	
						trans-1,4-Dichloro-2-butene	ICAL RRF	0.020	>0.05	ND(0.0050) J	
G582-146	GMA2-10	10/20/2008	Water	Tier II	Yes	1,2-Dibromo-3-chloropropane	ICAL RRF	0.019	>0.05	ND(0.0050) J	
						1,4-Dioxane	ICAL RRF	0.001	>0.05	ND(0.10) J	
						2-Butanone	ICAL RRF	0.047	>0.05	ND(0.0050) J	
						2-Chloroethylvinylether	MS/MSD %R	0.0%, 0.0%	16.7% to 200%	R	
						Acetone	MSD %R	0.0%	17.7% to 85%	R	
						Acetonitrile	ICAL RRF	0.009	>0.05	ND(0.020) J	
						Acrolein	MSD %R	0.0%	10.0% to 200%	R	
						Acrylonitrile	ICAL RRF	0.040	>0.05	ND(0.025) J	
						Bromomethane	CCAL %D	44.3%	<25%	ND(0.0010) J	
						Isobutanol	ICAL RRF	0.003	>0.05	ND(0.050) J	
						Methacrylonitrile	ICAL RRF	0.010	>0.05	ND(0.010) J	
						Propionitrile	ICAL RRF	0.012	>0.05	ND(0.020) J	
						trans-1,4-Dichloro-2-butene	ICAL RRF	0.014	>0.05	ND(0.0050) J	
						Trichlorofluoromethane	LCSD %R	76.6%	80.5% to 130%	ND(0.0010) J	
						Vinyl Chloride	LCSD %R	76.4%	77.5% to 126%	0.00032 J	
G582-146	OJ-MW-2	10/20/2008	Water	Tier II	Yes	1,2-Dibromo-3-chloropropane	ICAL RRF	0.019	>0.05	ND(0.0050) J	
						1,4-Dioxane	ICAL RRF	0.001	>0.05	ND(0.10) J	
						2-Butanone	ICAL RRF	0.047	>0.05	ND(0.0050) J	
						2-Chloroethylvinylether	ICAL RRF	0.027	>0.05	ND(0.013) J	
						Acetone	ICAL RRF	0.032	>0.05	ND(0.0050) J	
						Acetonitrile	ICAL RRF	0.009	>0.05	ND(0.020) J	
						Acrolein	ICAL RRF	0.023	>0.05	ND(0.025) J	
						Acrylonitrile	ICAL RRF	0.040	>0.05	ND(0.025) J	
						Bromomethane	CCAL %D	44.3%	<25%	ND(0.0010) J	
						Isobutanol	ICAL RRF	0.003	>0.05	ND(0.050) J	
						Methacrylonitrile	ICAL RRF	0.010	>0.05	ND(0.010) J	
						Propionitrile	ICAL RRF	0.012	>0.05	ND(0.020) J	
						trans-1,4-Dichloro-2-butene	ICAL RRF	0.014	>0.05	ND(0.0050) J	
						Trichlorofluoromethane	LCSD %R	76.6%	80.5% to 130%	ND(0.0010) J	
						Vinyl Chloride	LCSD %R	76.4%	77.5% to 126%	0.0024 J	
G582-146	TripBlank	10/20/2008	Water	Tier II	Yes	1,2-Dibromo-3-chloropropane	ICAL RRF	0.019	>0.05	ND(0.0050) J	
						1,4-Dioxane	ICAL RRF	0.001	>0.05	ND(0.10) J	
						2-Butanone	ICAL RRF	0.047	>0.05	ND(0.0050) J	
						2-Chloroethylvinylether	ICAL RRF	0.027	>0.05	ND(0.013) J	
						Acetone	ICAL RRF	0.032	>0.05	ND(0.0050) J	
						Acetonitrile	ICAL RRF	0.009	>0.05	ND(0.020) J	
						Acrolein	ICAL RRF	0.023	>0.05	ND(0.025) J	
						Acrylonitrile	ICAL RRF	0.040	>0.05	ND(0.025) J	
						Bromomethane	CCAL %D	44.3%	<25%	ND(0.0010) J	
						Isobutanol	ICAL RRF	0.003	>0.05	ND(0.050) J	
						Methacrylonitrile	ICAL RRF	0.010	>0.05	ND(0.010) J	
						Propionitrile	ICAL RRF	0.012	>0.05	ND(0.020) J	
						trans-1,4-Dichloro-2-butene	ICAL RRF	0.014	>0.05	ND(0.0050) J	
						Trichlorofluoromethane	LCSD %R	76.6%	80.5% to 130%	ND(0.0010) J	
						Vinyl Chloride	LCSD %R	76.4%	77.5% to 126%	ND(0.0010) J	
G582-187	GMA-2-RB-1	11/3/2008	Water	Tier II	Yes	1,2-Dibromo-3-chloropropane	ICAL RRF	0.012	>0.05	ND(0.0050) J	
						1,4-Dioxane	ICAL RRF	0.001	>0.05	ND(0.10) J	
						2-Butanone	ICAL RRF	0.047	>0.05	ND(0.0050) J	
						2-Chloroethylvinylether	ICAL RRF	0.027	>0.05	ND(0.013) J	
						Acetone	ICAL RRF	0.032	>0.05	ND(0.0050) J	

Table C-1
Analytical Data Validation Summary
Groundwater Management Area 2 Sampling - Fall 2008

General Electric Company - Pittsfield, Massachusetts
(Results are presented in parts per million, ppm)

Sample Delivery Group No.	Sample ID	Date Collected	Matrix	Validation Level	Qualification	Compound	QA/QC Parameter	Value	Control Limits	Qualified Result	Notes
VOCs (Continued)											
G582-187	GMA-2-RB-1	11/3/2008	Water	Tier II	Yes	Acetonitrile	ICAL RRF	0.009	>0.05	ND(0.020) J	
						Acrolein	ICAL RRF	0.023	>0.05	ND(0.025) J	
						Acrolein	CCAL %D	34.8%	<25%	ND(0.025) J	
						Acrylonitrile	ICAL RRF	0.040	>0.05	ND(0.025) J	
						Bromomethane	CCAL %D	40.0%	<25%	ND(0.0010) J	
						Isobutanol	ICAL RRF	0.003	>0.05	ND(0.050) J	
						Methacrylonitrile	ICAL RRF	0.010	>0.05	ND(0.010) J	
						Methacrylonitrile	CCAL %D	30.0%	<25%	ND(0.010) J	
						Propionitrile	ICAL RRF	0.012	>0.05	ND(0.020) J	
						trans-1,4-Dichloro-2-butene	ICAL RRF	0.028	>0.05	ND(0.0050) J	

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Appendix D

Historical Groundwater Data

Groundwater Elevation Monitoring
Data – Fall 2008

Table D-1
Groundwater Elevation Monitoring Data

Groundwater Managment Area 2 Long-Term Monitoring Program
Monitoring Event Evaluation Report for Fall 2008
General Electric Company - Pittsfield, Massachusetts

Well Name	Measuring Point Elevation (feet AMSL)	Date	Depth to Water (feet BMP)	Corrected Water Elevation (feet AMSL)
Former Oxbow Area J				
GMA 2-1	991.36	10/29/2008	14.98	976.38
GMA 2-2	991.19	10/29/2008	15.21	975.98
GMA 2-3	991.48	10/29/2008	14.01	977.47
GMA 2-6	989.73	10/29/2008	13.60	976.13
GMA 2-7	989.64	10/29/2008	13.34	976.30
GMA2-10	990.03	10/20/2008	16.02	974.01
GMA2-10	990.03	10/29/2008	13.97	976.06
J-1R	988.25	10/29/2008	13.09	975.16
MW-1	994.47	10/29/2008	12.18	982.29
MW-2	991.64	10/20/2008	14.52	977.12
MW-2	991.64	10/29/2008	12.16	979.48
Former Oxbow Area K				
GMA 2-4	983.41	10/29/2008	7.21	976.20
GMA 2-5	985.85	10/29/2008	9.05	976.80
GMA 2-8	982.30	10/29/2008	6.12	976.18
GMA 2-9	981.29	10/29/2008	5.68	975.61
GMA 1 East Street Area 2- North East Adjacent to GMA-2				
ES1-5	1,023.33	10/29/2008	39.78	983.55
GMA1-18	998.29	10/28/2008	6.10	992.19
GMA1-18	998.29	10/29/2008	4.95	993.34
ES1-20	1,001.56	10/29/2008	14.34	987.22
GMA 4 - North West Adjacent to GMA-2				
78-4	998.55	10/29/2008	12.54	986.01
78-5R	997.36	10/29/2008	4.70	992.66
GMA4-1	1,012.35	10/29/2008	23.18	989.17
GMA4-4	999.64	10/29/2008	12.75	986.89
H78B-13R	992.93	10/29/2008	10.90	982.03
H78B-15	1,012.68	10/29/2008	14.54	998.14
H78B-15	1,012.68	10/23/2008	15.75	996.93
H78B-16	999.33	10/29/2008	13.32	986.01
H78B-17R	1,000.31	10/29/2008	13.54	986.77
OPCA-MW-1RR	1,016.42	10/20/2008	18.32	998.10
OPCA-MW-1RR	1,016.42	10/29/2008	17.00	999.42
OPCA-MW-2R	1,018.84	10/20/2008	23.47	995.37
OPCA-MW-2R	1,018.84	10/29/2008	23.11	995.73
OPCA-MW-3	1,014.83	10/22/2008	20.70	994.13
OPCA-MW-3	1,014.83	10/29/2008	20.71	994.12
OPCA-MW-4	1,018.67	10/20/2008	12.63	1,006.04
OPCA-MW-4	1,018.67	10/29/2008	12.26	1,006.41
OPCA-MW-6	1,022.31	10/21/2008	18.50	1,003.81
OPCA-MW-6	1,022.31	10/29/2008	15.88	1,006.43

Table D-1
Groundwater Elevation Monitoring Data

Groundwater Managment Area 2 Long-Term Monitoring Program
Monitoring Event Evaluation Report for Fall 2008
General Electric Company - Pittsfield, Massachusetts

Well Name	Measuring Point Elevation (feet AMSL)	Date	Depth to Water (feet BMP)	Corrected Water Elevation (feet AMSL)
Housatonic River (Foot Bridge)				
GMA2-SG-1	989.82	5/19/2008	16.68	973.14
GMA2-SG-1	989.82	6/25/2008	16.60	973.22
GMA2-SG-1	989.82	7/21/2008	17.05	972.77
GMA2-SG-1	989.82	8/27/2008	17.25	972.57
GMA2-SG-1	989.82	9/17/2008	16.95	972.87
GMA2-SG-1	989.82	10/20/2008	17.04	972.78
GMA2-SG-1	989.82	10/21/2008	17.11	972.71
GMA2-SG-1	989.82	10/22/2008	17.05	972.77
GMA2-SG-1	989.82	10/23/2008	16.94	972.88
GMA2-SG-1	989.82	10/27/2008	15.71	974.11
GMA2-SG-1	989.82	10/28/2008	15.42	974.40
GMA2-SG-1	989.82	10/29/2008	14.94	974.88
GMA2-SG-1	989.82	10/30/2008	15.35	974.47

Notes:
1. ft BMP - feet Below Measuring Point.
2. A survey reference point was established on the Oxbow J & K foot bridge for staff gauge GMA2-SG-1. The "Depth to Water" value(s) provided in the above table refer to the vertical distance from the surveyed reference point to the water surface.

Table D-2
East Branch Housatonic River at Coltsville, MA River Discharge

Groundwater Managment Area 2 Long-Term Monitoring Program
Monitoring Event Evaluation Report for Fall 2008
General Electric Company - Pittsfield, Massachusetts

Date	Maximum Discharge (cfs)	Minimum Discharge (cfs)	Comments
5/19/2008	122	102	GMA2-SG-1 Monitored
6/25/2008	188	145	GMA2-SG-1 Monitored
7/21/2008	43	37	GMA2-SG-1 Monitored
8/27/2008	28	24	GMA2-SG-1 Monitored
9/17/2008	67	61	GMA2-SG-1 Monitored
10/20/2008	34	30	GMA2-SG-1 Monitored
10/21/2008	38	31	GMA2-SG-1 Monitored
10/22/2008	58	35	GMA2-SG-1 Monitored
10/23/2008	61	54	GMA2-SG-1 Monitored
10/27/2008	355	215	GMA2-SG-1 Monitored
10/28/2008	496	215	GMA2-SG-1 Monitored
10/29/2008	478	394	Fall 2008 Monitoring round
10/30/2008	398	266	GMA2-SG-1 Monitored

Notes:
1. ft BMP - feet Below Measuring Point.
2. Coltsville mean flow for the 10/29/08 Fall 2008 Monitoring round was 449 cubic feet per second (cfs).

Summary of Historical Groundwater Analytical Results – Selected Wells

Table D-3
Summary of Historical Groundwater Analytical Results

Groundwater Management Area 2 Long-Term Monitoring Program
Monitoring Event Evaluation Report for Fall 2008
General Electric Company - Pittsfield, Massachusetts
(Results are presented in parts per million, ppm)

Parameter / Sample ID: / Date Collected:	OJ-MW-2 04/15/02	OJ-MW-2 11/05/02	OJ-MW-2 11/06/02	OJ-MW-2 10/23/03	OJ-MW-2 05/24/04	OJ-MW-2 11/15/07	OJ-MW-2 04/29/08	OJ-MW-2 10/20/08
Volatile Organics								
trans-1,2-Dichloroethene	ND(0.0050)	ND(0.0050)	NA	ND(0.0050)	ND(0.0050) [ND(0.0050)]	ND(0.0010) [ND(0.0010)]	ND(0.0010)	ND(0.0010)
Trichloroethene	0.0029 J	0.012	NA	0.015	0.0048 J [0.0048 J]	0.015 [0.015]	0.012	0.012 [0.012]
Vinyl Chloride	ND(0.0020)	ND(0.0020)	NA	ND(0.0020)	ND(0.0020) [ND(0.0020)]	ND(0.0010) [ND(0.0010)]	0.00095 J	0.0024 [0.0021]
Total VOCs	0.0029 J	0.012	NA	0.015	0.0048 J [0.0048 J]	0.015 [0.015]	0.013 J	0.014 [0.014]
PCBs-Unfiltered								
Aroclor-1254	ND(0.000065)	NA	ND(0.000065)	ND(0.000065)	ND(0.000065) [ND(0.000065)]	NA	NA	NA
Total PCBs	0.000031 J	NA	ND(0.000065)	ND(0.000065)	ND(0.000065) [ND(0.000065)]	NA	NA	NA
PCBs-Filtered								
Aroclor-1254	ND(0.000065)	NA	ND(0.000065)	ND(0.000065)	ND(0.000065) [ND(0.000065)]	NA	NA	NA
Total PCBs	ND(0.000065)	NA	ND(0.000065)	ND(0.000065)	ND(0.000065) [ND(0.000065)]	NA	NA	NA

Table D-3
Summary of Historical Groundwater Analytical Results

Groundwater Management Area 2 Long-Term Monitoring Program
Monitoring Event Evaluation Report for Fall 2008
General Electric Company - Pittsfield, Massachusetts
(Results are presented in parts per million, ppm)

Parameter / Sample ID: / Date Collected:	GMA2-10 12/18/07	GMA2-10 04/28/08	GMA2-10 10/20/08 & 11/13/2008
Volatile Organics			
trans-1,2-Dichloroethene	0.00034J	ND(0.0010) [ND(0.0010)]	ND(0.0010)
Trichloroethene	ND(0.0010) [ND(0.0010)]	ND(0.0010) [ND(0.0010)]	ND(0.0010)
Vinyl Chloride	0.00047J	ND(0.0010) [ND(0.0010)]	0.00032 J
Total VOCs	0.00081 J	ND(0.0010) [ND(0.0010)]	0.00032 J
PCBs-Unfiltered			
Aroclor-1254	NA	NA	NA
Total PCBs	NA	NA	NA
PCBs-Filtered			
Aroclor-1254	NA	NA	ND(0.000068) [ND(0.000066)]
Total PCBs	NA	NA	ND(0.000068) [ND(0.000066)]

Notes:

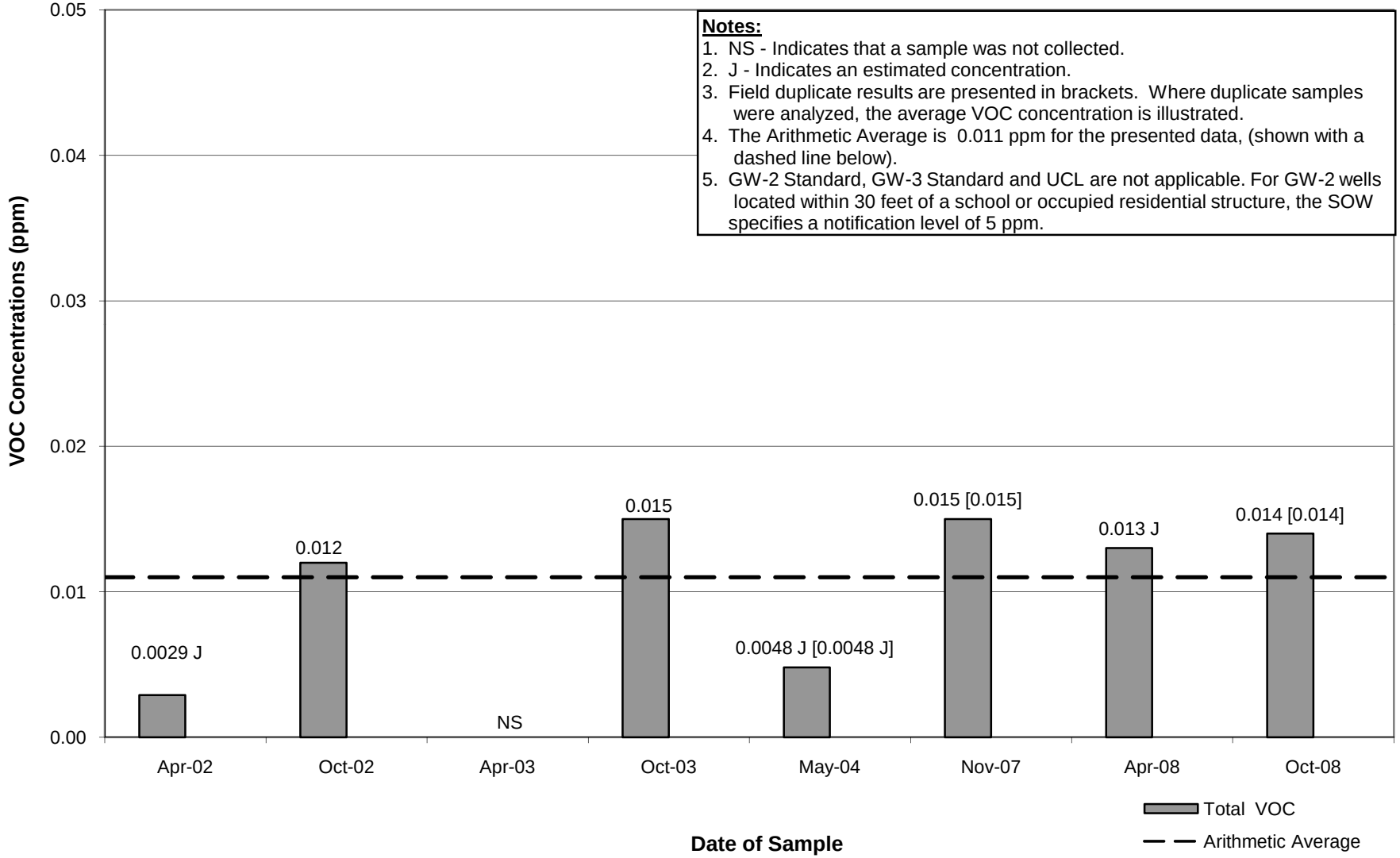
1. Samples were collected by ARCADIS, and submitted to SGS Environmental Services, Inc. for analysis of PCBs (filtered and unfiltered) and volatiles, where applicable.
2. Samples have been validated as per Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP), General Electric Company, Pittsfield, Massachusetts, ARCADIS (approved March 15, 2007 and re-submitted March 30,
3. 2007).
4. NA - Not Analyzed.
5. ND - Analyte was not detected. The number in parenthesis is the associated detection limit.
6. Only those constituents detected in one or more samples are summarized.
7. Field duplicate sample results are presented in brackets.
   For GMA2-10: VOCs were collected on 10/20/08, PCBs were collected on 11/13/08.
   Data Qualifiers:

   Organics (volatiles, PCBs)
   J - Indicates that the associated numerical value is an estimated concentration.

Total VOC Concentrations –
GMA2-10 and OJ-MW-2

Appendix D
Well OJ-MW-2 Historical Total VOC Concentrations

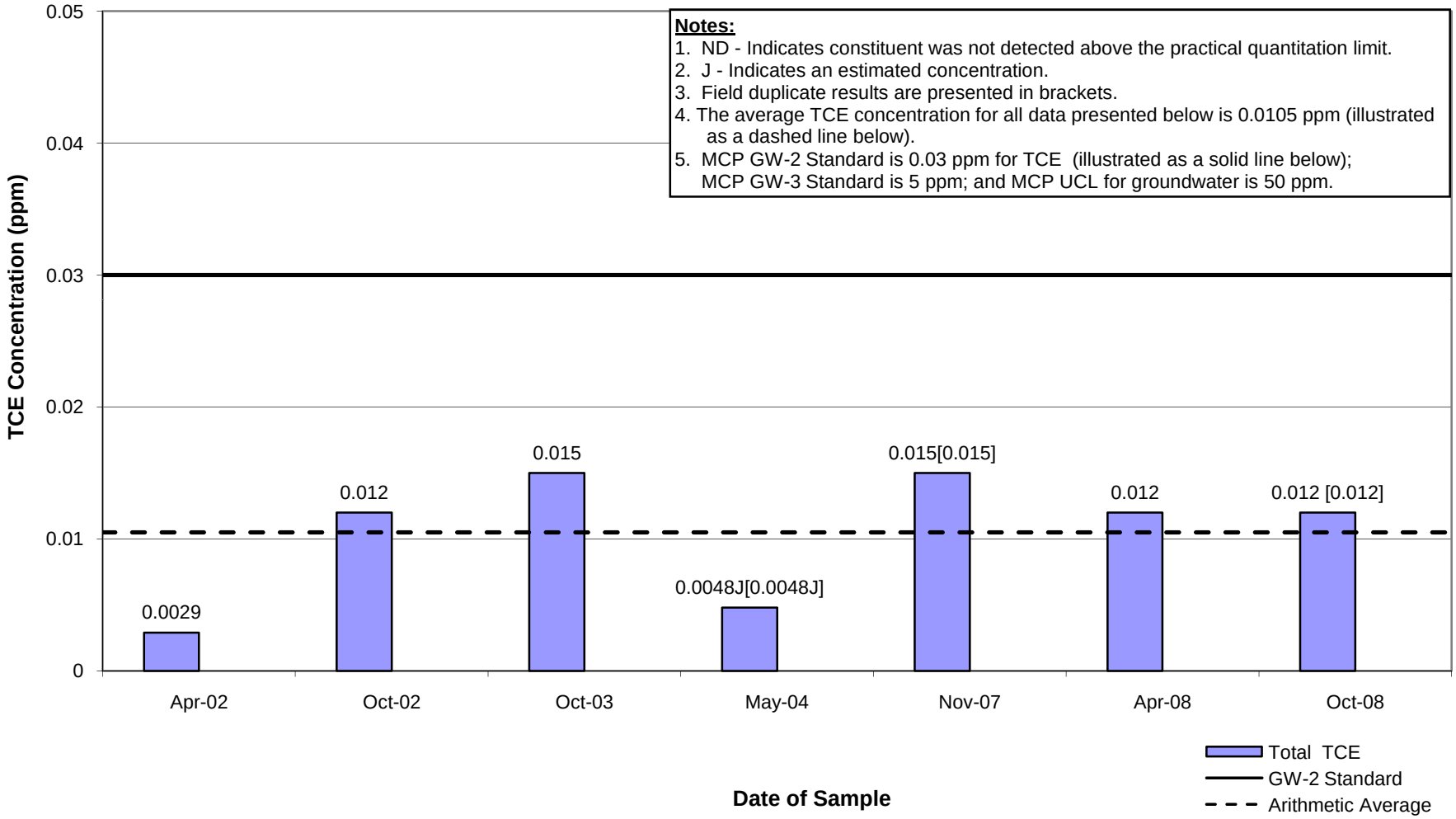
Groundwater Management Area 2
General Electric Company - Pittsfield, Massachusetts



Trichloroethene Concentrations –
Well OJ-MW-2

Appendix D
Well OJ-MW-2 Historical TCE Concentrations

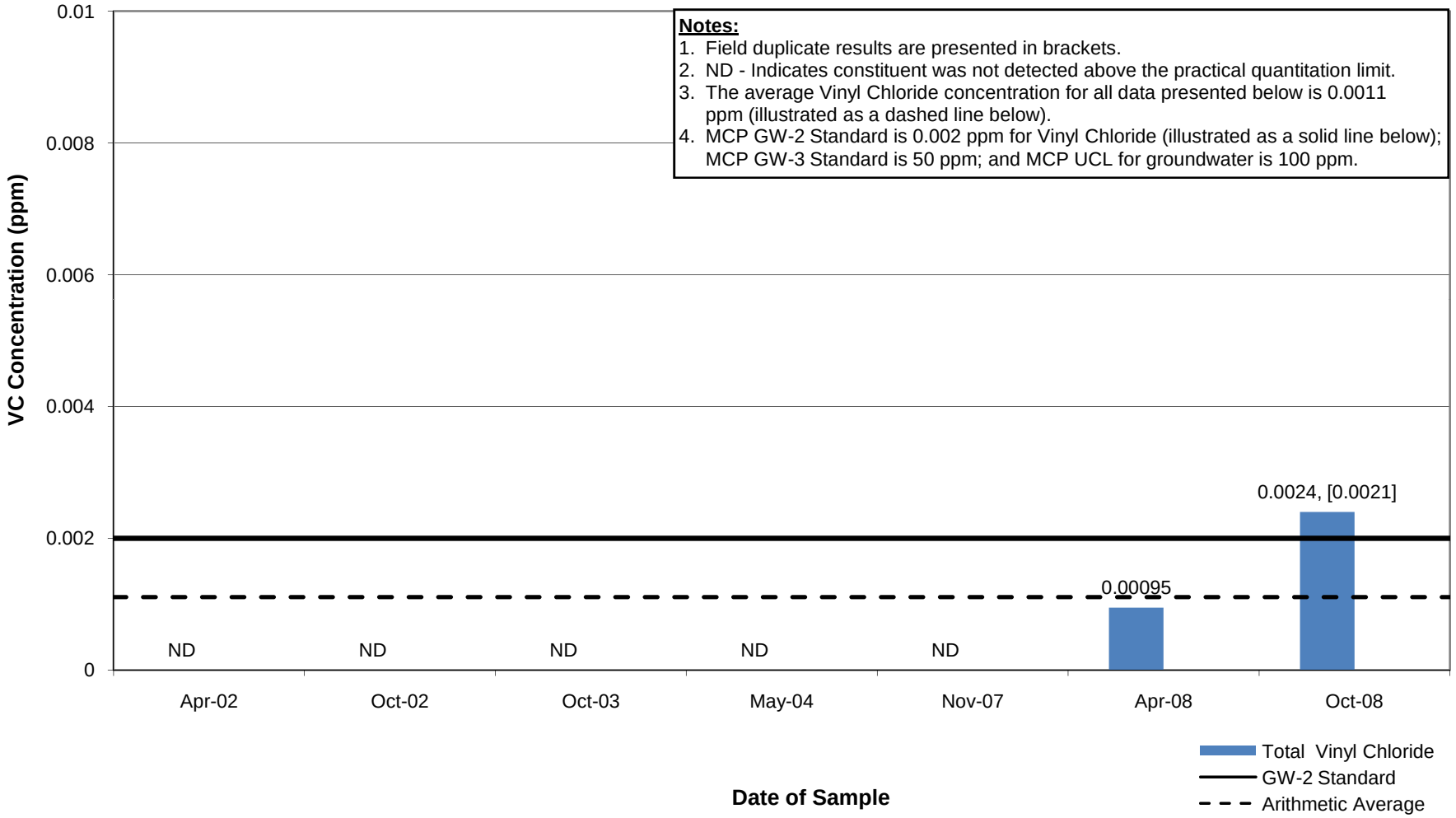
Groundwater Management Area 2
General Electric Company - Pittsfield, Massachusetts



Vinyl Chloride Concentrations – OJ-MW-2

Appendix D
Well OJ-MW-2 Historical Vinyl Chloride Concentrations

Groundwater Management Area 2
General Electric Company - Pittsfield, Massachusetts



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Appendix E

Statistical Summary of
Groundwater Analytical Data

Table E-1
Summary of Historical Groundwater Analytical Results - Well GMA2-10

Groundwater Management Area 2 Long-Term Monitoring Program
Monitoring Event Evaluation Report for Fall 2008
General Electric Company - Pittsfield, Massachusetts
(Results are presented in parts per million, ppm)

Parameter / Sample ID: / Date Collected:	Method 1 GW-2 Standards	Method 1 GW-3 Standards	MCP UCL for GroundWater	Detection Frequency	Minimum Detect	Maximum Detect	Median Value	Arithmetic Average	Geometric Mean	Standard Deviation	Fall 2008 GMA2-10 10/20/08
Volatile Organics											
trans-1,2-Dichloroethene	0.09	50	100	1/3	0.00034	0.00034	0.000500	0.000447	0.000440	0.0000924	ND(0.0010)
Vinyl Chloride	0.002	50	100	2/3	0.00032	0.00047	0.000470	0.000430	0.000422	0.0000964	0.00032 J
Total VOCs	5	Not Listed	Not Listed	2/3	0.00032	0.00081	0.000810	0.0170	0.00235	0.0285	0.00032 J

Notes:

1. Samples were collected by ARCADIS between 2002 and 2008 and submitted to SGS Environmental Services, Inc. for analysis.
2. Analytical results have been validated as per GE's approved Field Sampling Plan/Quality Assurance Project Plan.
3. ND - Analyte was not detected. The number in parenthesis is the associated detection limit.
4. Only constituents which were detected during at least one prior sampling event and were analyzed for during the fall 2008 sampling event are summarized.
5. Field duplicate sample results are presented in brackets.

Data Qualifiers:

Organics (volatiles)

J - Indicates that the associated numerical value is an estimated concentration.

Table E-2
Summary of Historical Groundwater Analytical Results - Well OJ-MW-2

Groundwater Management Area 2 Long-Term Monitoring Program
Monitoring Event Evaluation Report for Fall 2008
General Electric Company - Pittsfield, Massachusetts
(Results are presented in parts per million, ppm)

Parameter / Sample ID: / Date Collected:	Method 1 GW-2 Standards	Method 1 GW-3 Standards	MCP UCL for GroundWater	Detection Frequency	Minimum Detect	Maximum Detect	Median Value	Arithmetic Average	Geometric Mean	Standard Deviation	Fall 2008 Results OJ-MW-2 10/20/08
Volatile Organics											
Trichloroethene	0.03	5	50	7/7	0.0029	0.015	0.0120	0.0105	0.00916	0.00479	0.012 [0.012]
Vinyl Chloride	0.002	50	100	2/7	0.00095	0.0024	0.00100	0.00111	0.00101	0.000557	0.0024 [0.0021]
Total VOCs	5	Not Listed	Not Listed	7/7	0.0029	0.015	0.0130	0.0110	0.00947	0.00500	0.014 [0.014]

Notes:

1. Samples were collected by ARCADIS between 2002 and 2008 and submitted to SGS Environmental Services, Inc. for analysis.
2. Analytical results have been validated as per GE's approved Field Sampling Plan/Quality Assurance Project Plan.
3. ND - Analyte was not detected. The number in parenthesis is the associated detection limit.
4. Only constituents which were detected during at least one prior sampling event and were analyzed for during the fall 2008 sampling event are summarized.

Data Qualifiers:

Organics (volatiles)

J - Indicates that the associated numerical value is an estimated concentration.